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# **REINVENTING THE CORE U.S. TECHNOLOGY THROUGH THE ‘PUSH’ OF NEW REGULATION LEVERAGING MARKET ‘PULL’**

STEVEN FERREY\*

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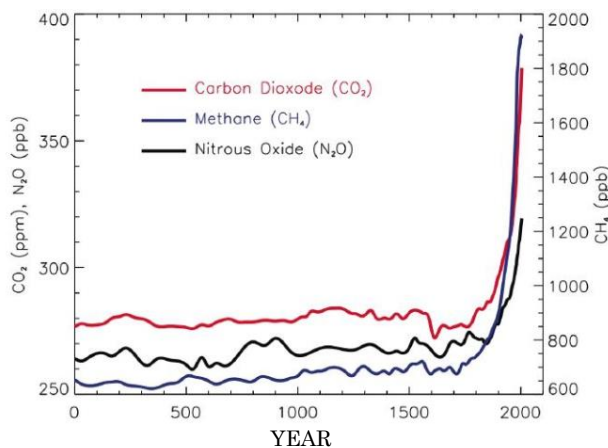
\* Steven Ferrey is Professor of Law at Suffolk University Law School and was Visiting Professor of Law at Harvard Law School in 2003. Since 1993, Professor Ferrey has been primary legal consultant to the World Bank and the U.N. Development Program on their renewable and carbon reduction policies in developing countries, where he has worked extensively in Asia, Africa, and Latin America. He holds a B.A. in Economics from Pomona College, a Juris Doctor degree and a Masters degree in Regional Energy Planning both from U.C. Berkeley, and was a post-doctoral Fulbright Fellow at the University of London on the administrative aspects and energy implications of regional redevelopment. He is the author of seven books on administrative and regulatory energy and environmental law and policy, the most recent of which are UNLOCKING THE GLOBAL WARMING TOOLBOX, 2010, ENVIRONMENTAL LAW, 7th ed. 2016, and THE LAW OF INDEPENDENT POWER, 39th ed., 2016. He also is the author of more than ninety articles on these topics. Professor Ferrey thanks research assistant Jared Kinsler for support with citations.

## I. TECHNOLOGY, CHANGE, THE FUTURE

Recent headlines broadcast that the process of government is broken, that nothing can move through the Congress which is deadlocked, with government at an impasse.<sup>1</sup> Yet, for the second most important invention in history and the most important invention of the last one thousand years,<sup>2</sup> fundamental technological change is in motion through new unilateral executive action. This fundamental change alters how we derive electricity and whether the Planet is rescued from the mounting ravages of climate change.

Climate change is the most significant international issue confronting all nations in the twenty-first century. After 800 years of Greenhouse Gas (GHG) levels hovering between 175-250 parts per million (ppm) of concentration in the atmosphere, they have now increased to about 400 ppm and are climbing rapidly.<sup>3</sup> And the earth is warming and sea level is rising.<sup>4</sup>

**Figure 1:**  
**Concentrations of Greenhouse Gases**



1. Thomas E. Mann, *Why Washington D.C. is Broken - and How it Can be Fixed*, SCHOLARS STRATEGY NETWORK (Oct. 2012), [https://www.scholarsstrategynetwork.org/sites/default/files/ssn\\_key\\_findings\\_mann\\_on\\_hyperpartisanship\\_and\\_extremism.pdf](https://www.scholarsstrategynetwork.org/sites/default/files/ssn_key_findings_mann_on_hyperpartisanship_and_extremism.pdf).

2. James Fallows, *The Fifty Greatest Breakthroughs Since the Wheel*, ATLANTIC MONTHLY (Nov. 2013). Electricity finished behind only the movable type printing press. Electricity is essential to operate seven other "top fifty" inventions of all time: The Internet, computers, air-conditioning, radio, television, the telephone, and semiconductors. *Id.*

3. See *infra* Fig. 1. Pieter Tans & Ralph Keeling, *Trends in Atmospheric Carbon Dioxide*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., <http://www.esrl.noaa.gov/gmd/ccgg/trends/> (last visited Jan. 24, 2016).

4. RISING TEMPERATURES, [http://wwf.panda.org/about\\_our\\_earth/aboutcc/problems/rising\\_temperatures/](http://wwf.panda.org/about_our_earth/aboutcc/problems/rising_temperatures/). (last visited Jan. 24, 2016); SEA LEVEL RISE, [http://wwf.panda.org/about\\_our\\_earth/aboutcc/problems/rising\\_temperatures/sea\\_levels/](http://wwf.panda.org/about_our_earth/aboutcc/problems/rising_temperatures/sea_levels/). (last visited Jan. 24, 2016).

GHG annual emissions increased about 70% between 1970 and 2004, with the combustion of fossil fuels accounting for 70% of GHG emissions, electric power generation responsible for 40% of CO<sub>2</sub> emissions, and coal-fired electric power generation accounting for about 70% of the emissions in this sector.<sup>5</sup> Global energy-related emissions are expected to increase 57% from 2005 to 2030.<sup>6</sup> At current rates of energy development, energy-related CO<sub>2</sub> emissions in 2050 would be 237% of their current levels under the existent pattern.<sup>7</sup> And it is estimated that life as we know it, and strife in the world, would change fundamentally with the resultant warming.<sup>8</sup>

This is the issue for the twenty-first century. The United Nations International Panel on Climate Change 2014 report concludes that in order to maintain world warming below an additional 2°C, there must be a 40-70% reduction of GHG emissions from 2010 levels by no later than 2050.<sup>9</sup> Electricity production accounts for less than 5% of U.S. economic activity, yet accounts for approximately one-quarter of emissions of certain criteria air pollutants.<sup>10</sup> Figure 2 illustrates that with carbon dioxide constituting 82% of all GHG emissions in the United States, the electric sector of the economy exceeds transportation, agriculture, industry and the commercial and residential sectors of the economy in its emission of GHGs. Of the four primary GHGs, the electric power sector emits CO<sub>2</sub> and methane, the two primary GHGs.

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5. Joëlle de Sépibus, *The Liberalisation of the Power Industry in the European Union and its Impact on Climate Change: A Legal Analysis of the Internal Market in Electricity*, SWISS NAT'L CTR. OF COMPETENCE IN RES., Working Paper No. 2008/10, 2008, 2-4 (2008), [http://phase1.nccr-trade.org/images/stories/Brown%20Bags/de20Sepibus\\_EU20lib20CC--final.pdf](http://phase1.nccr-trade.org/images/stories/Brown%20Bags/de20Sepibus_EU20lib20CC--final.pdf).

6. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-09-151, INTERNATIONAL CLIMATE CHANGE PROGRAMS: LESSONS LEARNED FROM THE EUROPEAN UNION'S EMISSIONS TRADING SCHEME AND THE KYOTO PROTOCOL'S CLEAN DEVELOPMENT MECHANISM 48 (2008), <http://www.gao.gov/assets/290/283397.pdf>.

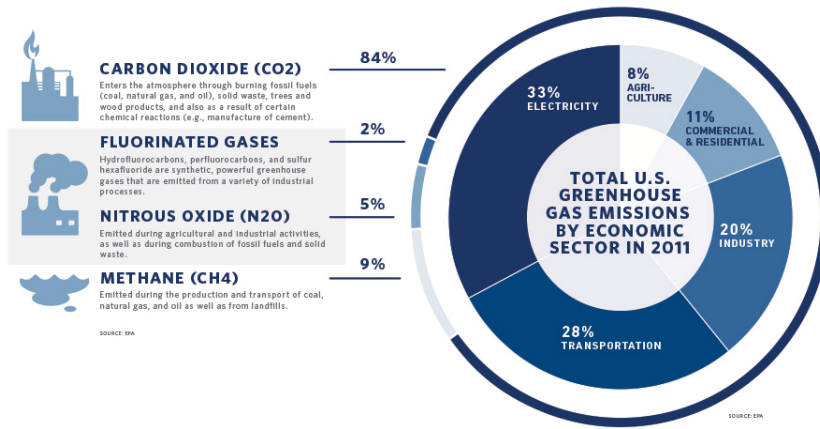
7. See William C. Ramsay, *Energy Technology Perspectives: Scenarios and Strategies to 2050*, INT'L ENERGY AGENCY (July 14, 2006), [http://www.unece.lsu.edu/biofuels/documents/2007July/SRN\\_020.pdf](http://www.unece.lsu.edu/biofuels/documents/2007July/SRN_020.pdf) (Press Conference at OECD Tokyo Center).

8. See generally Bill McKibben, *Global Warming's Terrifying New Math*, ROLLING STONE (July 19, 2012), <http://www.rollingstone.com/politics/news/global-warmings-terrifying-new-math-20120719>.

9. See INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2014 SYNTHESIS REPORT 20 (Nov. 1, 2014).

10. According to the Environmental Protection Agency in 2014, power generation was responsible for seventy percent of the oxides of sulfur dioxide (SO<sub>2</sub>), 13% of nitrogen oxide (NO) and 40% of the carbon dioxide (CO<sub>2</sub>) emissions in the United States. U.S. ENVTL. PROT. AGENCY, AIR EMISSIONS (May 22, 2014), <http://www.epa.gov/cleanenergy/energy-and-you/affect/air-emissions.html>.

**Figure 2:  
U.S. Greenhouse Gas Pollutions**



The Congressional Research Service concluded that “in 2010, fossil fuels accounted for [78%] of U.S. primary energy production.”<sup>11</sup> Ergo, climate change becomes primarily a power sector issue. Currently, the electric system relies primarily on coal-fired technology resources: 406 U.S. coal-fired power plants produce about 95% of the coal-fired power in the United States, accounting for approximately half of total U.S. electricity production in 2009, at an average cost of 3.2 cents/Kwh.<sup>12</sup> Approximately 10% of these older coal-fired power plants produce about 43% of the CO<sub>2</sub> emissions.<sup>13</sup>

To address CO<sub>2</sub> emissions at all, we must address the electric power sector, and in the U.S. and many countries in the world, this means first addressing coal. Coal use is the first largest target for federal CO<sub>2</sub> reduction strategies to meet a 30% reduction level.<sup>14</sup> Coal has been the dominant source of electric production in the U.S. and the world since the first harnessing of electricity 135 years ago.<sup>15</sup>

This article maps and examines the regulatory incentives and economic dynamics in a legally regulated world. In the federalist structure of U.S. governance, it is possible for one level of government, alone, to alter the fundamental way in which essential

11. MOLLY F. SHERLOCK, CONG. RESEARCH SERV., R41953, ENERGY TAX INCENTIVES: MEASURING VALUE ACROSS DIFFERENT TYPES OF ENERGY RESOURCES, at Summary (2012), <https://www.hsdl.org/?view&did=722543>.

12. *What Cost Energy? What Market Prices Fail to Reveal*, 22 THE ELECTRICITY J. 3 (Dec. 2009).

13. *Id.*

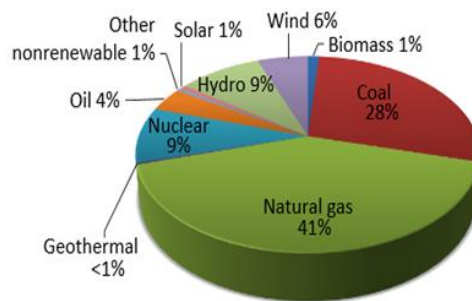
14. *See infra* Sect. III A.

15. *See* STEVEN FERREY, THE NEW RULES: A GUIDE TO ELECTRIC MARKET REGULATION 260 (Pennwell Pub., 1st ed. 2001). *See also supra* fig. 2.

infrastructure is implemented.<sup>16</sup> From the “push” provided by recent federal and state regulation, and the “pull” of economic market forces, U.S. GHG emissions in the industry sector have declined.<sup>17</sup> Some of this is due to the “pull” of the recent recession in demand for power and the market “pull” of decreasing prices of natural gas due to new hydro-fracking technologies,<sup>18</sup> for which gas serves as an alternative fossil fuel to coal for electric power generation. Natural gas power electric generating capacity and renewable energy power generating capacity are beginning to supplant coal generation just in the last five years, as shown in Figure 3.

This is significantly abetted by state, and to a lesser degree federal, regulatory incentive “pushes.” This article analyzes all in context. Section II examines in detail the legality of the “push” of federal tax policy and the policy and legal challenges to the “push” of state renewable portfolio standards and net metering which are shifting core U.S. power technology from fossil fuels to renewable energy. Section III advances to the “pull” of market forces which are making less polluting fossil fuels than coal viable substitutes going forward and the major economic break-through of solar distributed generation competing with fossil fuels. We highlight the new challenge of solar power’s intermittency fitting into a non-intermittent U.S. electric system. Both of these market “pulls” create alternatives to significantly mitigate the unsupportable trajectory of global warming emissions.

**Figure 3:**  
**Total U.S. Power Generation Capacity<sup>19</sup>**



16. See *infra* Sect. II B.

17. See U.S. ENVTL. PROT. AGENCY, INDUSTRY SECTOR EMISSIONS, <http://epa.gov/climatechange/ghgemissions/sources/industry.html> (last visited Jan. 24, 2016).

18. U.S. ENERGY INFO. ADMIN., EMISSIONS OF GREENHOUSE GASES IN THE U.S. (Mar. 31, 2011), [http://www.eia.gov/environment/emissions/ghg\\_report/ghg\\_carbon.cfm](http://www.eia.gov/environment/emissions/ghg_report/ghg_carbon.cfm).

19. DENSITY OF POWER PLANTS BY OPERATING CAPACITY: CONTINENTAL UNITED STATES, [http://www.snl.com/Images/Infographics/us\\_power\\_generation\\_big.jpg](http://www.snl.com/Images/Infographics/us_power_generation_big.jpg) (last visited Jan. 24, 2016).

The “pushes” and “pulls” examined in Sections II and III utilize different legal mechanisms sanctioned by distinct regulatory law. Section IV analyzes, in context, these critical legal distinctions governing the “push” and “pull” of modern power sector incentives. The federal tax base underwrites federal renewable energy incentives, and is totally distinct from the state retail electric rate base of all consumers of electric power which underwrites state renewable portfolio standards and net metering incentives. The legal precedent surrounding the state rate base requires vertical and horizontal equity that are not required in federal tax policy. We examine how policy can violate precedent.

There are winners and losers depending on which legal incentives are used to implement the transition in power technology. Section V enters this legal maelstrom to navigate the distinct law and regulation of how we change fundamental technology for the second most important invention of all time and rescue the climate. Here, the law will determine the effective policy and the future of the Planet. There will be winners and losers. We start next with the “push.”

## II. THE “PUSH” OF FEDERAL AND STATE POLICY

### *A. Federal Tax “Push”*

The federal government provides incentives for the energy sector through the tax system. The particular energy technologies subsidized through the federal tax incentives have changed over recent years. Figure 4 displays the cost of tax incentives for various fossil fuel and renewable technologies over an almost forty-year period ending in fiscal year 2015.<sup>20</sup> A recent shift to incentives for renewable power is evident. For producing most of U.S. power today, coal and other fossil fuels which together produce two-thirds of U.S. power, since the recent shift, now receive less than half of the subsidy amounts.<sup>21</sup> A recent shift to incentives for renewable power is visible, first occurring during the Bush Administration in 2008.

Examining the specifics, the primary federal energy incentives are delivered through tax credits and depreciation. There is nothing atypical about this: world governments subsidize gasoline, electricity and other energy in the amount of \$1.9 trillion a year.<sup>22</sup>

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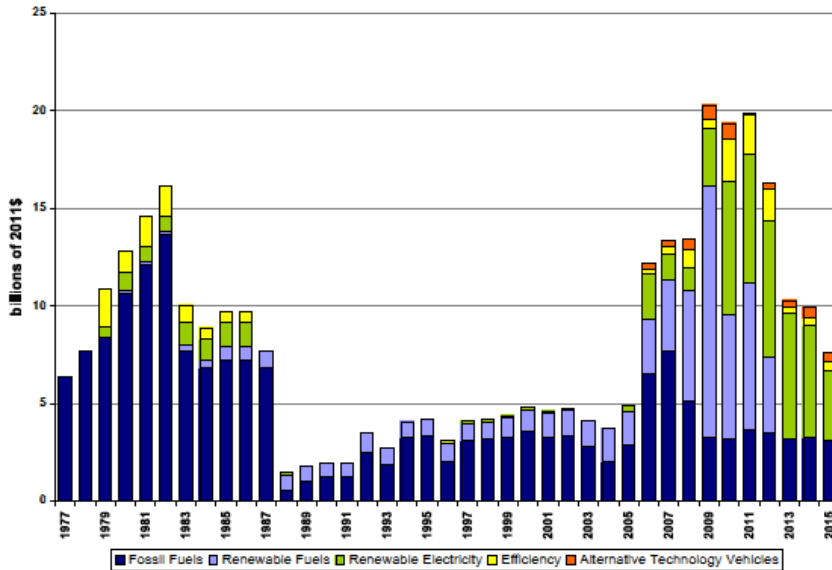
20. Sherlock, *supra* note 11, at fig. 2.

21. *Id.*

22. Press Release, Int’l Monetary Fund, IMF Calls for Global Reform of Energy Subsidies: Sees Major Gains for Economic Growth and the Environment, Press Release No. 13/93 (Mar. 27, 2013), <http://www.imf.org/external/np/sec/pr/2013/pr1393.htm>; *see also*

The predominate direction of U.S. federal tax incentives has shifted recently from underwriting coal to support of renewable power.

**Figure 4:**  
**Projected Annual Cost of**  
**Energy-Related Tax Incentives<sup>23</sup>**  
**(Fiscal year 1977 – Fiscal year 2015)**



The value of federal tax support for the energy sector was estimated to be \$19.1 billion in 2010 and \$16.6 billion in 2012.<sup>24</sup> Of this, approximately one-third (\$6.3 billion) was given for tax incentives for the use of renewable fuels.<sup>25</sup> “Another \$6.7 billion can be attributed to tax-related incentives supporting various renewable energy technologies,”<sup>26</sup> and targeted tax incentives for the use of fossil energy resources amounted to \$2.4 billion.<sup>27</sup> “In 2010, nearly half of the tax incentives for renewables benefitted biofuels,”<sup>28</sup> and “[f]rom 2009 onwards, the increased costs associated

Howard Schneider, *IMF, citing \$1.9 trillion in government subsidies, calls for end to energy ‘mispricing’*, WASH. POST (Mar. 27, 2013), [http://articles.washingtonpost.com/2013-03-27/business/38059145\\_1\\_climate-change-energy-subsidies-imf-officials](http://articles.washingtonpost.com/2013-03-27/business/38059145_1_climate-change-energy-subsidies-imf-officials).

23. See Sherlock, *supra* note 11, at fig. 2.

24. *Id.* at 6.

25. *Id.* at 6–7, table 2.

26. *Id.* at Summary.

27. *Id.* at 6–7, table 2.

28. *Id.* at 10 (“Of the estimated \$19.1 billion in energy tax provisions in 2010, an estimated \$6.3 billion, or [thirty-three percent], went toward supporting biofuels.”).



with incentives for renewable electricity are largely attributable to the Section 1603 grants in lieu of tax credit program.”<sup>29</sup>

As of August 2011, renewable developers had received \$28.5 billion in grants and loan guarantees from the Obama Administration.<sup>30</sup> About a quarter of this amount flowed through the U.S. Treasury Section 1603 grant program.<sup>31</sup> The remainder is commitments through the Section 1705 loan guarantee program for thirty-two different projects.<sup>32</sup> As of May 2013, the 1603 program had approved 9000 grants for \$18.5 billion, \$17 billion of which were received for wind projects.<sup>33</sup>

Table 1 displays the estimated revenue cost of various federal energy tax incentives for recent years.<sup>34</sup> Renewable energy has dominated fossil fuels for the past five years.

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29. *Id.* “The Section 1603 grant option is not available for projects that began construction after December 31, 2011. However, since grants are paid out when construction is completed and eligible property is placed in service, outlays under the Section 1603 program are expected to continue through 2017.” *Id.* “Outlays under the Section 1603 grant program are projected to be \$4.1 billion for FY2012. Under current law, wind property must be placed in service prior to the end of calendar year 2012 to qualify for the Section 1603 grant. To qualify for the grant, eligible biomass, geothermal energy, landfill gas, trash, hydropower, and marine and hydrokinetic property must be placed in service by the end of 2013. By FY2015, outlays under the Section 1603 grant program are projected to fall to \$1.2 billion. The placed-in-service deadline for solar, geothermal heat pump, fuel cell, microturbine, and combined heat and power (CHP) property is the end of 2016. For FY2017, projected outlays are \$0.1 billion.” *Id.* at 10 n. 32.

For additional background, see generally PHILLIP BROWN & MOLLY F. SHERLOCK, CONG. RESEARCH SERV., R41635, *ARRA SECTION 1603 GRANTS IN LIEU OF TAX CREDITS FOR RENEWABLE ENERGY: OVERVIEW, ANALYSIS, AND POLICY OPTIONS* (2011), <http://archives.republicans.energycommerce.house.gov/Media/file/PDFs/110911CRS1603report.pdf>.

30. Jeffrey Ryser, *Cash, Loan Guarantee Programs for Renewable Development Now Total up to \$28.5 Billion*, *ELECTRIC UTIL. WK.*, Aug. 8, 2011, at 3.

31. *Id.*

32. *Id.*

33. TIGTA: *Some Renewable Energy Groups May Have Double-Dipped on Tax Credits*, *ENERGY & CLIMATE REP. (BNA)* (Feb. 27, 2014).

34. MOLLY F. SHERLOCK, CONG. RES. SERV. 7-5700, *ENERGY TAX INCENTIVES: MEASURING VALUE ACROSS DIFFERENT TYPES OF ENERGY RESOURCES* 6-7 tbl. 2 (Mar. 19, 2015) (displaying the Joint Committee on Taxation and the Department of the Treasury data).

**Table 1:**  
**Estimated Revenue Cost of Energy Tax**  
**Provisions: Fiscal Years 2010 through 2012**  
**(Dollar value in billions)<sup>35</sup>**

<b>Provision:</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
<b>Fossil Fuels</b>			
Expensing of Exploration and Development Costs for Oil & Gas	0.7	0.8	0.8
Percentage Depletion for Oil & Gas	0.5	0.9	0.9
Amortization of Geological & Geophys. Costs for Oil & Gas Exploration	0.1	0.1	0.1
Fifteen-year Depreciation for Natural Gas Distribution Lines	0.1	0.1	0.1
Election to Expense fifty percent of Qualified Refinery Costs	0.7	0.8	0.7
Amortization of Air Pollution Control Facilities	0.1	0.2	0.2
Credits for Investments in Clean Coal Facilities	0.2	0.2	0.2
Excise Tax Credits for Alternative Fuel Mixtures	N/A <sup>36</sup>	0.2	0.2
<i>Subtotal: Fossil Fuels</i>	<i>2.4</i>	<i>3.3</i>	<i>3.2</i>
<b>Renewables</b>			
Production Tax Credit (PTC)	1.4	1.4	1.6
Investment Tax Credit (ITC)	(i) <sup>37</sup>	0.5	0.5
Accelerated Depreciation for Renewable Energy Property	0.3	0.3	0.3

Table 2 summarizes and contrasts energy production and energy tax incentives.<sup>38</sup> The analysis presented in these tables highlights only energy subsidies provided through the tax code, and does not examine direct or indirect energy subsidies.<sup>39</sup>

35. *Id.*

36. N/A “indicates that the provision was not listed in the 2010 tax expenditure tables.” SHERLOCK, *supra* note 34, at 8.

37. “(i) indicates a positive estimated revenue loss of less than \$50 million.” *Id.*

38. *Id.* at 8-9 tbl. 3 (calculated using data presented in *supra* tbls. 1, 2).

39. *Id.* at 14. In contrast to U.S. Energy Information Agency (EIA) studies, this includes Section 1603 grants in the place of tax credits as a tax-related provision. The EIA lists the Section 1603 grants in place “of tax credits as a direct expenditure.” *Id.*

**Table 2:**  
**Comparing Energy Production**  
**and Energy Tax Incentives:**  
**Fossil Fuels and Renewables, 2010<sup>40</sup>**

	Production		Tax Incentives	
	Quadrillion Btu	Dollar % of Total	Billions of Dollars	Dollar% of Total
Fossil Fuels	58.5	78.0%	\$2.4	12.6%
Renewables	8.1	10.7%	\$13.0	68.1%
Renewables (excluding hydroelectric)	5.6	7.4%	\$13.0	68.1%
Renewables (excluding biofuel & tax incentives)	6.2	8.3%	\$6.7	35.1%
Renewables (excluding hydroelectric, biofuels & tax incentives)	3.7	4.9%	\$6.7	35.1%

Table 3 presents tax subsidies to electricity production by fuel type.<sup>41</sup> Again, as of this date, fossil fuels receive a much smaller percentage allocation than their share of electric production. Although 44.9% of generation in 2010 can be attributed to coal, coal received an estimated 10% of tax incentives.<sup>42</sup> Again, renewable energy subsidies dominate fossil fuel subsidies for the recent years. Correspondingly, renewable sources receive a much larger share than their share of electric production.

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40. See *id.* at 8-9 tbl. 3.

41. *Id.* at 15 tbl. 4. The data is taken from the EIA. *Id.*

42. *Id.* at 14. This is similar to the EIA's data for 2007, "where 47.6% of generation was attributable to coal, 12.7% of total federal financial support for electricity production was provided to coal." See also *id.* at 17 tbl. 6.

**Table 3:**  
**Subsidies to Electricity**  
**Production by Fuel Type, 2010**  
**(Dollar value in millions)**

	<b>Production</b>		<b>Federal Financial Incentives</b>		
<b>Fuel Type</b>	<b>FY2010 Net Generation (billion kWh)</b>	<b>% of Total</b>	<b>Tax Subsidies</b>	<b>Other Subsidies</b>	<b>% of Total</b>
Coal	1,851	44.9%	486	703	10.0%
Nat. Gas & Petrol. Liquid	1,030	25.0%	583	72	5.5%
Nuclear	807	19.6%	908	1,591	21.0%
Renewables	425	10.3%	1,347	5,212	55.3%
Biomass	57	1.4%	54	61	1.0%
Geothermal	16	0.4%	1	199	1.7%
Hydropower	257	6.2%	17	198	1.8%
Solar	1	0.0%	99	869	8.2%
Wind	95	2.3%	1,178	3,808	42.0%
Transmission/ Distribution	(i)	(i)	58	924	8.2%
<b>Total</b>	<b>4,091</b>	<b>100%</b>	<b>3,382</b>	<b>8,502</b>	<b>100%</b>

In the past seven years, there have been substantial U.S. federal tax incentives for renewable energy development. The fossil fuel-related tax incentives are estimated by the Congressional Research Service to reduce federal tax revenues by \$20.6 billion between 2013 and 2017; during the same period “the total cost of tax-related provisions supporting the production of renewable energy (tax expenditures and grants designed to replace tax expenditures) is estimated to be \$39.6 billion.”<sup>43</sup> The federal incentive impact is significant: “Since President Obama took office, the U.S. has increased solar electricity generation by more than ten-fold, and tripled electricity production from wind power...[we will be]

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43. Molly F. Sherlock & Margot L. Crandall-Hollick, *Energy Tax Policy: Issues in the 112th Congress* 14-15 (Mar. 28, 2012). “Of this total for renewable energy, \$17.2 billion is for outlays under the Section 1603 grants in lieu of tax credits program.” *Id.* The cost of tax expenditure and excise tax incentives for renewables, not counting the Section 1603 grants, is estimated to be \$22.4 billion from 2013 and 2017. *Id.* “Historically, the primary tax incentive for renewable electricity has been the production tax credit (PTC). The American Recovery and Reinvestment Act . . . substantially modified this incentive, allowing projects eligible for the renewable PTC or investment tax credit (ITC) to claim a one-time grant in lieu of the tax credits.” *Id.*

doubling wind and solar electricity generation in the United States — once again — by 2025.”<sup>44</sup>

Notwithstanding these tax credits and incentives, the United States has been criticized as ranking near the bottom of the thirty-four OECD countries (along with Canada, Mexico, and Chile) in terms of effective national energy tax rates to limit national carbon dioxide emissions.<sup>45</sup> The United States was criticized for not taxing energy use for heating, process use, and electricity, although some U.S. states do tax some of these uses.<sup>46</sup> However, the states have put forth significant effort to promote renewable energy and limit carbon emissions.

### *B. State Incentive Renewable Power “Push”*

The states have undertaken the lion’s share of renewable energy policy initiatives in the past two decades, sculpting sustainable energy initiatives, including, primarily, the use of:

- Net Metering: in 88% of states<sup>47</sup>
- Renewable portfolio standards: in 65% of states<sup>48</sup>

Each of these can be a powerful stimulant to sustainable renewable energy deployment in a market economy: each provides a financial inflow at either the point of project construction or generation of renewable electric power.

#### 1. State Renewable Portfolio Standards

Renewable Portfolio Standards (“RPS”) require electric utilities and other retail electric providers to include in their retail sales a specified percentage of electricity supply annually from renewable energy sources.<sup>49</sup> Such standards create and account for Renewable Energy Credits (“RECs”) associated with production of each megawatt-hour of generation from an eligible renewable energy facility. RECs can be associated with utility-owned generation, or

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44. CUTTING CARBON POLLUTION IN AMERICA, <http://www.whitehouse.gov/energy/climate-change> (last visited Jan. 24, 2016).

45. OECD, TAXING ENERGY USE: A GRAPHICAL ANALYSIS 31 (2013), [http://www.keepeek.com/oecd/media/taxation/taxing-energy-use\\_9789264183933-en#page1](http://www.keepeek.com/oecd/media/taxation/taxing-energy-use_9789264183933-en#page1); Rick Mitchell, *U.S. Lags on Using Energy Taxes to Achieve Environmental Goals*, *OECD Data Shows*, 36 INT’L ENV’T REP. (BNA) 228 (2013).

46. Mitchell, *supra* note 45.

47. See *infra* Section II B 2.

48. See *infra* Section II B 1.

49. See *Renewable Portfolio Standards*, NAT’L RENEWABLE ENERGY LAB., [http://www.nrel.gov/tech\\_deployment/state\\_local\\_governments/basics\\_portfolio\\_standards.html](http://www.nrel.gov/tech_deployment/state_local_governments/basics_portfolio_standards.html).

regulated utilities and retailers can acquire tradable RECs from independent power producers; the RECs exist as a separate commodity to be traded and transferred, if allowed by the state.<sup>50</sup>

### *a. Policy Variations on Portfolios*

As a matter of global policy, fourteen nations mandate RPS programs, and additionally, several nations allow their states to implement RPS.<sup>51</sup> Twenty-nine U.S. states and the District of Columbia have some form of RPS.<sup>52</sup> These mandatory RPS programs cover about half of nationwide retail electricity sales.<sup>53</sup> The RPS programs in the states are very different in terms of what technologies qualify. The required state percentage of energy delivered from renewables currently ranges from 2%-40% of annual retail sales in different state programs, as shown in Figure 5. Some southern and rocky-mountain states which tend to have the most amount of coal-fired generation, are less likely to be among the twenty-nine U.S. states which have renewable portfolio standards.<sup>54</sup> The current RPS standards are projected to add 76,750 Mw of additional renewable generation by 2025.<sup>55</sup> In order to comply with the RPS requirements, electric utilities can purchase RECs from eligible renewable generation.

A number of variations for resource portfolios are possible, including a renewable resource portfolio requirement, a DSM portfolio requirement, and a fossil plant efficiency portfolio requirement.<sup>56</sup> All state RPS programs are distinct with no identical design to another program. The required percentage of renewable power is different in each state. The timelines are different, qualifications of renewable technology are different, waiver provisions are different, enforcement penalties are different,

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50. Ryan Wiser & Galen Barbose, *Renewables Portfolio Standard in the United States: A Status Report with Data Through 2007*, LAWRENCE BERKELEY NAT'L LAB. 1 (Apr. 2008), <http://emp.lbl.gov/sites/all/files/REPORT%20lbl-154e-revised.pdf>.

51. See DATABASE OF ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, SUMMARY TABLES, <http://programs.dsireusa.org/system/program/tables> (last visited Jan. 24, 2016).

52. See DATABASE OF ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, DETAILED SUMMARY MAPS, <http://www.dsireusa.org/resources/detailed-summary-maps/> (last visited Jan. 24, 2016).

53. See Wiser & Barbose, *supra* note 50.

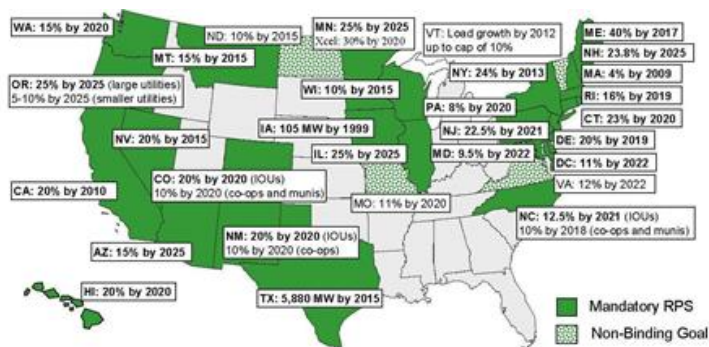
54. See NAT'L RENEWABLE ENERGY LAB., RPS POLICIES (2013), [http://www.nrel.gov/tech\\_deployment/state\\_local\\_governments/images/map\\_solar\\_dgrps.jpg](http://www.nrel.gov/tech_deployment/state_local_governments/images/map_solar_dgrps.jpg)

55. Brad Plummer, *The Biggest Fight Over Renewable Energy is Now in the States*, WASH. POST, Mar. 25, 2013.

56. A renewable resource portfolio requirement would involve vertically integrated utilities or generating companies being required to develop renewable resources as a certain proportion of their generation capacity. DSM portfolio requirements would require vertically integrated distribution companies and electricity brokers to acquire DSM resources up to a certain fraction of their aggregate customer demand. The utility would have the option of implementing the DSM itself or purchasing efficiency savings from customers or ESCOs.

regulated entities are different, credit trading schemes are different, off-sets are different, and compliance mechanisms are different.

**Figure 5:  
RPS by State**



Approximately 40% of U.S. electric load is covered by a state RPS program or by a renewable purchase obligation program. It is estimated that roughly half of new renewable energy power capacity in the U.S. over the last decade has occurred in states with RPS programs in place.<sup>57</sup> Over 90% of these capacity additions have come from wind power, with biomass and geothermal resources in second and third position.<sup>58</sup> The current RPS standards are projected to add 76,750 MW of additional renewable generation by 2025.<sup>59</sup>

Connecticut,<sup>60</sup> Maine,<sup>61</sup> Maryland,<sup>62</sup> New Hampshire,<sup>63</sup> New Jersey,<sup>64</sup> New York,<sup>65</sup> Pennsylvania<sup>66</sup> and the District of Columbia<sup>67</sup> have tiered RPS programs. Tiers provide the states with the flexibility to require different percentages of energy from various renewable energy sources within the tier. Figure 6 illustrates the installed new wind capacity by state for 2012. Of note, many of the

57. Ryan Wiser, et al., *The Experience with Renewable Portfolio Standards in the United States*, ELEC. J. (2007) (quoting an estimate by Black & Veatch that half of the capacity equals approximately 5,500 MW).

58. *Id.*

59. Brad Plummer, *supra* note 55.

60. CONN. DEPT. OF ENVTL. PROTECTION, 2013 COMPREHENSIVE ENERGY STRATEGY FOR CONN. (Feb 19, 2013), [http://www.ct.gov/deep/lib/deep/energy/cep/2013\\_ces\\_executive\\_summary\\_final.pdf](http://www.ct.gov/deep/lib/deep/energy/cep/2013_ces_executive_summary_final.pdf).

61. ME. REV. STAT. ANN. 35-A. 32, § 3210-C(2) (2006).

62. MD. CODE ANN., [Pub. Util. Cos.] § 7-701 (2004).

63. N.H. REV. STAT. ANN. § 362-F:1 (2007).

64. N.J. STAT. ANN. § 48:3-49 (1999).

65. N.Y. COMP. CODES R. & REGS. 03. E § 0188 (2004).

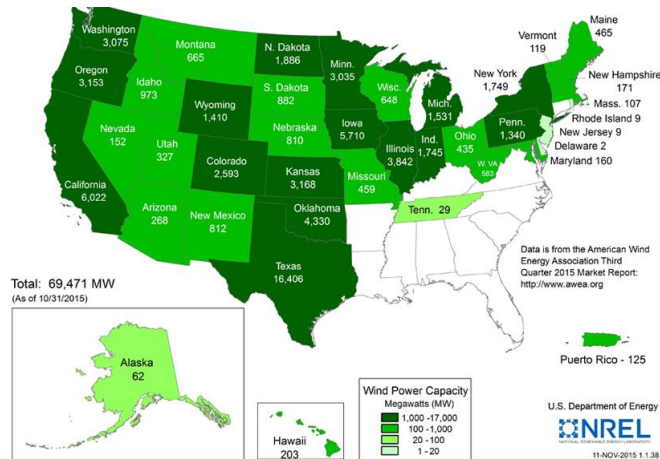
66. Pa. Const. Stat. § 75.62(e) (2005).

67. D.C. CODE § 34-1431 (2005).

states which had significant coal-fired generation (Texas, Pennsylvania, Illinois, Indiana) have now installed significant wind generation.

It is estimated that 45% of the 4,300 MW of wind power installed in the U.S. between 2001 and 2004 was motivated by state renewable portfolio standards, while an additional 15% of these installations were motivated by state renewable energy trust funds and subsidies.<sup>68</sup> In those states that have RPS programs, more than 90% of renewable energy additions (and more than 80% of average capacity supplied) are from wind power, with biomass a distant second and limited geothermal resource development. Wind installed is displayed in Figure 6. A study predicts that state renewable portfolio standards will stimulate the development of 52,000 MW of new renewable energy projects between 2005 and 2020,<sup>69</sup> approximately 80% of which is expected to come from wind power projects.<sup>70</sup> While wind generation is not a comparable base load source of energy as is coal, there is an ongoing substitution phenomenon.

**Figure 6:**  
**2012 Installed Wind Energy Capacity (in Mw)**



68. Ryan Wiser & Mark Bollinger, *Balancing Cost and Risk: The Treatment of Renewable Energy in Western Utility Resource Plans* 1 (Aug. 10, 2005), [https://emp.lbl.gov/sites/all/files/REPORT%20bnl%20-%2058450\\_0.pdf](https://emp.lbl.gov/sites/all/files/REPORT%20bnl%20-%2058450_0.pdf).

69. *Renewable Energy: The Bottom Line*, GLOBAL ENERGY DECISIONS (Consulting Report 2005), [http://www.academia.edu/8619158/Renewable\\_Energy\\_The\\_Bottom\\_Line\\_2005\\_](http://www.academia.edu/8619158/Renewable_Energy_The_Bottom_Line_2005_). The report calculates that 40,000 of the new 52,000 MW will be new wind projects. It calculates that the capital investment will be \$53 million in this capacity. The study indicates that additional transmission capacity will be necessary for this new wind development.

70. *Id.* This report looks at North American RPS impact on renewable energy.



*b. Cost and Benefit*

The typical national cost to the utility to purchase RECs is approximately a 40% increase in cost of the value of the wholesale power itself (not the total cost of retail bundled cost including taxes).<sup>71</sup> For a utility in Massachusetts, the REC purchase price is currently about 120% the wholesale cost of the power itself.<sup>72</sup> With solar RECs, in some states, the solar REC price is averaging 500% over the value of the power in terms of the cost to utilities for solar RECs.<sup>73</sup> The ACP penalty price to the utility of not complying can be more than 1000% the value of the power involved.<sup>74</sup> The price impact on retail ratepayers of RPS-mandated renewable energy programs has been estimated to range between a 0.1% increase in retail rates (in Maine, Maryland, New Jersey, and New York) to up to 1.1% retail rate impact in Massachusetts.<sup>75</sup>

Satisfying the California goal of having 33% of electricity supplied by renewable resources by 2020 is estimated by the California PUC to require the expenditure of approximately \$115 billion.<sup>76</sup> According to PUC member John Bohn, there should be more honesty about these facts and costs.<sup>77</sup>

Both National Grid and Northeast Utilities, the parent company of NStar, the utility which owns Boston Edison Company, submitted testimony supporting the goals of the Massachusetts solar program but raising concerns about its costs. National Grid personnel submitted testimony saying the price supports for solar "are set at very high levels relative to the revenues necessary to incentivize solar installations."<sup>78</sup> National Grid estimated the cost of \$3.95 per month per residential customer to pay for the Massachusetts RPS program, expected to rise by \$1 per month by 2015.<sup>79</sup>

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71. Author's calculation assuming a trading price of \$15-20 for a state REC.

72. Author's calculation, assuming \$60/REC selling price, with wholesale power being transacted in ISO-NE at approximately an average price of \$50/Mwh.

73. Author's calculations with Massachusetts solar RECs selling in the \$220-500/SREC trading range.

74. Author's calculation, comparing an ACP of \$550/SREC in Massachusetts with the \$50/Mwh average price of power.

75. Ryan Wiser, et al., *The Experience with Renewable Portfolio Standards in the United States*, 20 ELEC. J. 8, 16 (May 2007). An impact of not more than approximately one percent is forecast to be the cost of this implementation.

76. Lisa Weinzimmer & Lynn Corum, *California Challenge Looks Bigger and Bigger Among Economic Woes*, ELEC. UTIL. WEEK (Jan. 18, 2010).

77. *Id.*

78. Bruce Mohl, *Green Energy Costs Raising Concerns*, COMMONWEALTH MAG. (Aug. 8, 2013), <http://www.commonwealthmagazine.org/Voices/Back-Story/2013/Summer/004-Green-energy-costs-raising-concerns.aspx>.

79. *Id.*

*c. Is Coal a “Renewable” Resource as a Matter of Law?*

Coal is not usually considered a renewable resource that would be eligible for an RPS program. However, states can define “renewable” resources as anything that they wish to cross-subsidize through their RPS systems. While not the norm, some states allow coal to qualify to create RECs within their RPS programs.<sup>80</sup>

Certain unconventional state RPS technology definitions and requirements are shown in Table 5. Pennsylvania is the only state that has a tiered system that requires a 10% share from the tier which includes coal power as renewable and an 8% share from the tier that does not include coal.<sup>81</sup> Ohio includes coal with carbon reduction and also has advanced nuclear listed in its acceptable technology listing, defined as “energy technology consisting of generation III technology as defined by the nuclear regulatory commission or other later technology.”<sup>82</sup> Michigan includes coal-fired power with carbon capture-and-storage (CCS).<sup>83</sup>

**Table 5:**  
**States with Unconventional RPS**  
**Renewable Energy Requirements as of 2014**

State	Provision
Michigan	“(i) A gasification facility. (ii) An industrial cogeneration facility. (iii) A coal-fired electric generating facility if 85% or more of the carbon dioxide emissions are captured and permanently geologically sequestered. (iv) An electric generating facility or system that uses technologies not in commercial operation on the effective date of this act.”
Ohio	“‘Clean coal technology’ means any technology that removes or has the design capability to remove criteria pollutants and carbon dioxide from an electric generating facility that uses coal as a fuel or feedstock as identified in the control plan requirements in paragraph (C) of rule 4901:1-41-03 of the Admin. Code.”
Penn.	“Electricity generated from combustion of waste coal in facilities when the waste coal was disposed of or abandoned prior to July 31, 1982, or disposed of thereafter in a permitted coal refuse disposal site regardless of when disposed of. Facilities combusting waste coal shall use, a minimum, a combined fluidized

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80. MICH. COMP. LAWS § 460.1003 (2008); OHIO ADMIN. CODE 4901:1-40 (2009); 75 PA. CONS. STAT. § 75.62 (2005).

81. PA. CONS. STAT. § 75.62(b) (2005).

82. OHIO ADMIN. CODE 4901:1-40 (2009).

83. MICH. COMP. LAWS § 460.1003 (2008).

	bed boiler and be outfitted with a limestone injection system and a fabric filter particulate removal system. Alternative energy credits shall be calculated based upon the proportion of waste coal utilized to produce electricity at the facility. Applicants may petition for waste coal from non-permitted sites to be qualified for alternative energy resource status. The Commission may grant such petitions at its discretion."
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In 2009, the West Virginia legislature amended its RPS program to include the use of new clean coal technologies as eligible along with renewable energy projects. Massachusetts allows coal-derived fuels producing power to qualify for RPS.<sup>84</sup> The alternative resources would include gasification of coal with carbon capture and storage, combined heat and power, flywheel storage, and other alternatives.<sup>85</sup>

#### *d. Legal Vulnerabilities*

There was a successful suit alleging that Massachusetts renewable energy tradable energy credits under capped incentives violated the Constitution.<sup>86</sup> The program was successfully challenged on Constitutional grounds in 2010 by TransCanada Corporation, the owner of a Maine wind project.<sup>87</sup> The suit alleged that Massachusetts's limitation on eligible solar Renewable Energy Credits ("SRECs") as well as issuance of long-term power purchase contracts only to Massachusetts companies, discriminated against out-of-state renewable energy projects in violation of the dormant Commerce Clause of the U.S. Constitution.<sup>88</sup> Massachusetts immediately settled the litigation so as to avoid a court decision, providing that TransCanada would be eligible for these programs.<sup>89</sup>

"Statutes that discriminate by 'practical effect and design,' rather than explicitly on the face of the regulation, are similarly subjected to heightened scrutiny."<sup>90</sup> A state cannot regulate to

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84. M.G.L. c. 25A Section 11F, 11F ½, 225 C.M.R. 14.00-16.00.

85. 225 C.M.R. 16.00.

86. *TransCanada Power Mktg., Ltd. v. Bowles*, No. 4:10-cv-40070-FDS (D. Mass. 2010). See also E. Ailworth, *State Looking to Settle Suit Over Law on Clean Energy*, BOSTON GLOBE (May 27, 2010), [http://www.boston.com/business/articles/2010/05/27/lawsuit\\_hits\\_mass\\_law\\_promoting\\_local\\_energy\\_providers/](http://www.boston.com/business/articles/2010/05/27/lawsuit_hits_mass_law_promoting_local_energy_providers/).

87. *Id.*

88. *Id.*

89. MASS. DEP'T. OF ENERGY RES., PARTIAL SETTLEMENT AGREEMENT WITH TRANSCANADA, <http://www.mass.gov/eea/docs/doer/renewables/solar/settlement-agreement.pdf>.

90. *Tri-M Grp., LLC v. Sharp*, 638 F.3d 406, 427 (3d Cir. 2011) (citing *Am. Truching Ass'n, Inc. v. Whitman*, 437 F.3d 313, 319 (3d Cir. 2006) (quoting *C & A Carbone, Inc. v. Town of Clarkstown*, 511 U.S. 383, 394 (1994)).

favor, or require use of, its own in-state energy resources,<sup>91</sup> nor can it, by regulation, harbor energy-related resources originating in the state.<sup>92</sup>

In-state fuels cannot be required to be used by a state even for the rationale to satisfy federal Clean Air Act requirements.<sup>93</sup> States cannot give income tax credits solely to in-state producers.<sup>94</sup> The courts have determined that electrons in interstate commerce cannot be traced.<sup>95</sup> The Supreme Court has found states to have impermissibly favored in-state economic interests over out-of-state economic interests by precluding out-of-state producers from shipping products directly to in-state consumers,<sup>96</sup> and providing property tax exemptions to in-state entities that primarily serve state residents but not to in-state entities which principally serve interstate clientele.<sup>97</sup>

A dormant Commerce Clause violation cannot “be avoided by ‘simply invoking the convenient apologetics of the police power.’”<sup>98</sup> Minnesota enacted a statute to bar certain types of power use in the state or electric power that is created outside the state with this fuel and transmitted into the state.<sup>99</sup> Minnesota also banned the import of foreign coal or coal-produced power into Minnesota for power generation.<sup>100</sup> The law bans Minnesota utilities from importing power from new coal plants outside the state, and raises the cost of future purchases of coal power by assigning environmental costs to use of the fuel.<sup>101</sup> The act prohibits construction of new coal plants in the state and restricts utilities from creating any more long-term power-purchase agreements for coal-derived energy from other states.<sup>102</sup>

91. *Wyoming v. Oklahoma*, 502 U.S. 437, 454-56 (1992); *Alliance for Clean Coal v. Craig*, 840 F. Supp. 554, 560 (N.D. Ill. 1993).

92. *New England Power Co. v. New Hampshire*, 455 U.S. 331, 339 (1982).

93. *Alliance for Clean Coal v. Miller*, 44 F.3d 591, 596-97 (7th Cir. 1995).

94. *New Energy Co. of Indiana v. Limbach*, 486 U.S. 269, 271, 278-80 (1988). *See also* *Or. Waste Sys. v. Dep’t of Env’tl. Quality*, 511 U.S. 93, 99-100 (1994) (a greater surcharge on disposal of in-state waste than on disposal of out-of-state waste facially discriminated against interstate commerce).

95. *New York v. FERC*, 535 U.S. 1, 7 n. 5 (2002); *Fed. Power Comm’n v. Fla. Power & Light Co.*, 404 U.S. 453, 458 (1972).

96. *Granholm v. Heald*, 544 U.S. 460, 473-74 (2005).

97. *Camps Newfound/Owatonna, Inc. v. Town of Harrison*, 520 U.S. 564, 576-77 (1997).

98. *S. Pac. Co. v. Ariz. ex rel. Sullivan*, 325 U.S. 761, 779-80 (1945) (citing *Kansas City So. Ry. v. Kaw Valley Drainage Dist.*, 233 U.S. 75, 79 (1914); *Buck v. Kuykendall*, 267 U.S. 307, 315 (1925)).

99. *North Dakota v. Heydinger*, No. 11-CV-3232, 2014 WL 1612331, \*1 (D. Minn. 2012).

100. Minnesota-based utilities operate power plants in west-central North Dakota’s coal-producing region. The power stations are fueled by nearby lignite mines. The law made exceptions for Minnesota coal projects. 2007 Minn. Laws Ch. 136, art. 5, § 3; MINN. STAT. § 216H.03, subd. 3.

101. *Id.* Next Generation Energy Act, MINN. STAT. § 216H.03 (2007).

102. *Id.* Exemptions were made for the proposed Excelsior Energy integrated gasification combined cycle (IGCC) plant in northern Minnesota, the Big Stone II coal plant

Since the power was in interstate commerce, North Dakota and others challenged Minnesota's Next Generation Energy Act on dormant Commerce Clause grounds.<sup>103</sup> Such a future ban has been upheld, if not based on geographic location.<sup>104</sup> The federal court in Minnesota addressed balkanization if states regulate energy in addition to the FERC-approved Midcontinent Independent System Operator ("MISO"), the area's regional transmission organization: "[s]uch a scenario is just the kind of competing and interlocking local economic regulation that the Commerce Clause was meant to preclude."<sup>105</sup>

The Minnesota federal court announced that "any attempt directly to assert extraterritorial jurisdiction over persons or property would offend sister States and exceed the inherent limits of the State's power."<sup>106</sup> It held that Minnesota had acted clearly to affect commerce occurring outside the state, and this was a per se violation of the Commerce Clause.<sup>107</sup> The court declined to even need or be required to reach the issue of whether there was undue discrimination in the substance of the Minnesota statute.<sup>108</sup>

The Minnesota court treated electricity distinctly from other energy sources, which it is both in terms of its physics and its status in American law.<sup>109</sup> Wyoming overturned an Oklahoma statute involving only a 10% allocation of the market to in-state producers, and as a result of the statute, the market changed from use of almost all out-of-state coal to "the utilities purchased [in-state] Oklahoma coal in amounts ranging from 3.4% to 7.4% of their annual needs, with a necessarily corresponding reduction in purchases of Wyoming coal."<sup>110</sup>

North Dakota and representatives of its coal industry also sued Minnesota on Article VI grounds alleging it imposes Constitutional violations when it affects the wholesale price and transmission of

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in South Dakota, and the Maple Grove-based Great River Energy's Spiritwood Station plant in North Dakota. MINN. STAT. § 216B.1694, (2008); 2009 Minn. PUC LEXIS 6; 2010 Minn. PUC LEXIS 458.

103. Next Generation Energy Act, MINN. STAT., § 216H.03 (2007).

104. *Norfolk Southern Corp. v. Oberly*, 822 F.2d 388 (3d Cir. 1987).

105. *North Dakota v. Heydinger*, 15 F. Supp. 3d 891, 918 (D. Minn. 2014) (internal citations omitted).

106. *Id.* at 911 (citing *Edgar v. MITE Corp.*, 457 U.S. 624, 642 (1982)).

107. *Id.* at 918-19.

108. *Id.* at 911-12.

109. Steven Ferrey, *Inverting Choice of Law in the Wired Universe: Thermodynamics, Mass and Energy*, 45 WM. & MARY L. REV. 1839 (2004); FERREY, LAW OF INDEPENDENT POWER 2-8, 2-9 (34th ed., 2014); Ferrey, ENVIRONMENTAL LAW, *supra*, at 568.

110. *Wyoming v. Oklahoma*, 502 U.S. 437, 455 (1992). *See also* Alliance for Clean Coal v. Miller, 44 F.3d 591, 596 (7th Cir. 1995) (Even though the Act did not compel use of Illinois coal or forbid use of out-of-state coal, by the statute encouraging use of Illinois coal, it "discriminate[d] against western coal by making it a less viable compliance option for Illinois generating plants.")

power within exclusive federal authority regarding wholesale electricity pricing.<sup>111</sup> Just as the federal court ruled that it didn't need to reach the second step or claim under the Commerce Clause challenge regarding undue discrimination, it also didn't need to reach the separate additional Constitutional issue under the Supremacy Clause.<sup>112</sup> Having found the state statute unconstitutional because of its "attempt directly to asset extraterritorial jurisdiction over persons or property . . . exceed[ing] the inherent limits of State's power,"<sup>113</sup> the court did not need to proceed to any of the additional constitutional challenges.

Most recently, and at the highest federal court level yet, Justice Richard Posner, for the Seventh Circuit Court of Appeals in a unanimous decision,<sup>114</sup> citing as authority on RPS programs, a 2012 law review article authored by Professor Ferrey,<sup>115</sup> in *dicta*, declared unconstitutional a state limiting state renewable portfolio standards to in-state generation, as a violation of the Commerce Clause: "[it] trips over an insurmountable constitutional objection. Michigan cannot, without violating the commerce clause of Article I of the Constitution, discriminate against out-of-state renewable energy."<sup>116</sup> Justice Scalia, concurring in the majority prior opinion in *West Lynn Creamery*, submitted that, "a state subsidy would clearly be invalid under any formulation of the Court's guiding principle" for "dormant" Commerce Clause cases.<sup>117</sup>

## 2. State Incentive "Push" of New Metering

### *a. Program Regulatory Variations*

The Energy Policy Act of 2005 ("EPACT") encouraged the widespread adoption of net metering policies at the state level.<sup>118</sup> Under EPACT, state regulatory commissions and electric utilities are

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111. Heydinger, 15 F. Supp. 3d at 916. Plaintiffs include North Dakota, Basin Electric Power Cooperative, North American Coal Corp., Great Northern Properties LP, Missouri River Energy Services, Lignite Energy Council, and Minnkota Power Cooperative Inc. *Id.* at 899.

112. *Id.*

113. *Id.* at 119 (citing *Edgar v. MITE Corp.*, 457 U.S. 624, 643 (1982)).

114. Ill. Commerce Comm'n v. FERC, 721 F.3d 764 (7th Cir. 2013).

115. *Id.* at 776 (citing Steven Ferrey, *Threading the Constitutional Needle with Care: The Commerce Clause Threat to the New Infrastructure of Renewable Power*, 7 TEXAS J. OIL, GAS & ENERGY L. 59, 69, 106–07 (2012)).

116. *Id.* at 776.

117. *West Lynn Creamery, Inc. v. Healy*, 512 U.S. 186, 208 (1994) (Scalia, J., concurring).

118. 16 U.S.C. § 2621(d)(11) (2012); SOLAR ELEC. POWER ASS'N, RATEMAKING, SOLAR VALUE AND SOLAR NET ENERGY METERING – A PRIMER 1, <https://www.solarelectricpower.org/media/51299/sepa-nem-report-0713-print.pdf> (last visited Jan. 24, 2016) ("SEPA PRIMER").

required to make net metering services available upon request.<sup>119</sup> Forty-four states and the District of Columbia have some form of net metering policy, while seven states (Alabama, Idaho, Mississippi, South Dakota, Tennessee and Texas) do not have net metering.<sup>120</sup> As of 2003, there were approximately 7000 net metering customers in the United States,<sup>121</sup> and in 2010, there were 150,000.<sup>122</sup> Each of the forty-three state net metering programs is distinct. There are differences as to allowable sizes of units, vintage and longevity of credits, ability to cash out credits, eligible classes of customers, and eligible technologies.<sup>123</sup>

Under net metering, when the customer purchases and uses electricity from the distribution company, the meter runs forward; when more electricity is produced from the facility than is consumed by the customer, the excess is sent to the electricity grid, running the meter in reverse direction and reversing the net accounting of power flow.<sup>124</sup> By turning the meter backwards, and because only a single rate applies to a single meter, net metering effectively compensates the generator at the full retail rate (which includes that approximately two-thirds of the retail bill is attributable to transmission, distribution, and taxes) for transferring just the wholesale energy commodity—the power itself.<sup>125</sup> In essence, it receives for that power an amount that could be above the utility's avoided cost and the wholesale cost of power, and reflects distribution investments made by the utility, not the independent renewable generator.

### *b. Costs and Benefits*

Associated Industries of Massachusetts (“AIM”) voiced concern about the Massachusetts plan to further green technologies, which it claimed could cost \$10 billion for wind and solar power subsidies over a single decade.<sup>126</sup> AIM estimated that the cost could be

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119. 16 U.S.C. § 2621(d)(11) (2012).

120. SEPA PRIMER, *supra* note 118, at 1.

121. Energy Information Administration (EIA), *infra* note 267.

122. *Id.*

123. See SUMMARY TABLES, *supra* note 53.

124. See DATABASE ST. INCENTIVES FOR RENEWABLES & EFFICIENCY, GLOSSARY <http://www.dsireusa.org/glossary/> (“When a customer’s generation exceeds the customer’s use, electricity from the customer flows back to the grid, offsetting electricity consumed by the customer at a different time during the same billing cycle.”).

125. See *id.* (“In effect, the customer uses excess generation to offset electricity that the customer otherwise would have to purchase at the utility’s full retail rate.”). As to whether electricity is a “good” or a “service” and how it should be treated under the law, see STEVEN FERREY, THE NEW RULES: A GUIDE TO ELECTRIC MARKET REGULATION 211–31 (2000).

126. Letter from Robert A. Rio, Vice President, Assoc. Indus. of Mass., to Susan Leavitt, Dept. of Energy Res., <http://www.mass.gov/eea/docs/doer/renewables/solar/aim-robert-rio.pdf>

\$800 million annually, an increase of almost 30% in distribution charges.<sup>127</sup> In addition, \$10 billion of subsidies could be distributed to the sector according to AIM.<sup>128</sup> Massachusetts had the third highest electric costs in the country prior to any of these subsidies.

Utility National Grid was already seeking distribution rate increases of 18% in 2009.<sup>129</sup> National Grid estimated that net metering cost will more than double between summer 2013 and the end of the year (\$0.09/month to \$0.23/month), and then more than triple again by the end of 2014 (\$0.93/month).<sup>130</sup> This currently represents 5.4% of the typical residential customer bill, before all the projected increases.<sup>131</sup> National Grid estimated publicly that the separate net metering cost more than doubled between summer 2013 and the end of 2013, and will more than triple from the 2014 amount again by the end of 2015. \$4.04 monthly is the cost of the two green energy mandates, which represents 5.4% of the typical Grid customer's monthly bill of \$74.38/month, not including the state energy efficiency mandates which cost the typical customer another \$4.70 a month.<sup>132</sup>

Figure 7 illustrates the cost of power in different states. The states with the most expensive retail electric power in the country are those with net metering and RPS programs. While this is not necessarily the key causal link, any of these state incentive programs increase the costs which are passed on in their entirety to retail customers.

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127. Steven Ferrey, *Sale of Electricity*, in *THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES* (M. Gerrard ed. 2011).

128. *Id.*

129. *Id.*

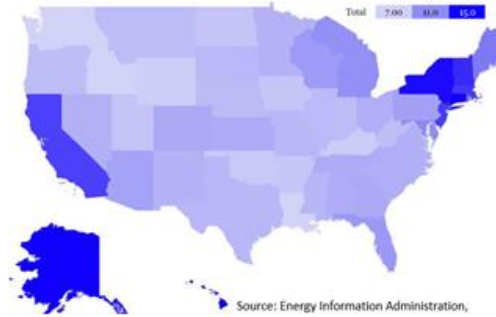
130. *Id.*

131. *Id.*

132. *Id.*



**Figure 7:**  
**Avg. Electricity Price, 2012**  
**(in cents/kwh)**



Federal courts in 2013, including the Supreme Court,<sup>133</sup> the federal circuit courts of appeals,<sup>134</sup> federal trial courts,<sup>135</sup> plus FERC,<sup>136</sup> confronted seven specific federal cases alleging that state regulation of energy violated the Supremacy Clause and/or the Commerce Clause of the Constitution. At both the trial and appellate court levels, the states have lost on a significant legal claim of petitioners. Net metering remains in forty-four states, and RPS in twenty-nine states.

The significant “push” of state incentives for renewable power remains a significant factor in the move toward renewable power and away from coal-fired power technology. The National Energy Reliability Council (“NERC”) has been concerned that the renewable portfolio standards (“RPS”) in twenty-nine states and four Canadian provinces, which cross-subsidize certain non-fossil sources of power production, could cause

133. *American Trucking Ass’n. v. City of Los Angeles*, 133 S. Ct. 2096 (2013); *City of Arlington v. FCC*, 133 S. Ct. 1863 (2013).

134. *Entergy Nuclear Vt. Yankee v. Shumlin*, 733 F.3d 393 (2d Cir. 2013); *Illinois Commerce Comm’n, supra* note 114; *Rocky Mountain Farmers Union v. Corey*, 730 F.3d 1070 (9th Cir. 2013).

135. *Entergy Nuclear Vt. Yankee v. Shumlin*, 838 F. Supp. 2d 183, 233 (D. Vt. 2012); *Rocky Mountain Farmers Union v. Goldstene*, 843 F. Supp. 2d 1071, 1099 (E.D. Cal. 2011); *PPL EnergyPlus, LLC v. Nazarian*, 2013 WL 5432346 (D. Md. 2013) *aff’d* 753 F.3d 467 (4th Cir. 2014) (field preemption and conflict preemption on wholesale power prices); *PPL Energyplus, LLC v. Hanna*, 2013 WL 5603896 (D.N.J. Oct. 11, 2013), *aff’d* *PPL Energyplus, LLC v. Solomon*, 766 F.3d 241 (3d Cir. 2014) (field preemption on wholesale power prices and rates).

136. FERC Order on Petitions for Declaratory Order, In re: California Public Utilities Commission, Southern California Edison Company, Pacific Gas and Electric Company, San Diego Gas & Electric Company, 132 FERC P 61047 (F.E.R.C.), 61337–38 (2010).

early substitution of traditional coal-fired power with renewable power, and simultaneously decrease grid reliability.<sup>137</sup>

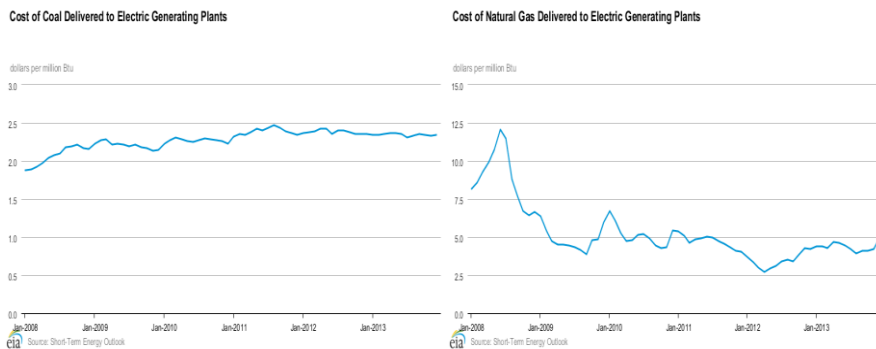
### III. THE “PULL” OF ECONOMIC COMPETITION FOR TECHNOLOGY

#### *A. Natural Gas Changes Its Molecular Policy Weight*

##### 1. Taking the Plunge

The United States polity operates within a market economy. Basic economics exert a fundamental influence on how electricity is produced in the U.S. Figure 8 illustrates that in the last eight years, natural gas prices have fallen precipitously to one-third of their prior value.<sup>138</sup> They now are only a modest premium over coal prices compared on a comparison of energy value of the fuels, as shown in Figure 8.

**Figure 8: U.S. Coal and  
Natural Gas Prices, 2008-2013<sup>139</sup>**



As shown, natural gas is cost-competitive with the traditionally much cheaper cost of coal for power generation, and has the added benefit of gas producing only approximately one-half as much CO<sub>2</sub> as coal, no particulate matter criteria pollutants, no SO<sub>2</sub> criteria pollutant emissions, and the ability to emit less NO<sub>x</sub>.<sup>140</sup> New

137. PUBLIC UTILITIES FEAR THAT GHG CUTS MIGHT THREATEN ELECTRICITY SUPPLY, RELIABILITY (July 28, 2008), <http://insideepaclimate.com/>.

138. Gail Teverberg, *Why U.S. Natural Gas Prices are so Low-Are Changes Needed?*, OUR FINITE WORLD (Mar. 23, 2012), <http://ourfineteworld.com/2012/03/23/why-us-natural-gas-prices-are-so-low-are-changes-needed/>.

139. *Id.*

140. AM. GAS ASS'N, ENVIRONMENTAL BENEFITS OF NATURAL GAS, <http://www.aga.org/environmental-benefits-natural-gas> (last visited Dec. 9, 2014).

combined-cycle gas turbines, a spin-off technology from the aviation industry, has transformed the economics of the industry, by providing a more efficient means to convert energy inputs to electric output.<sup>141</sup>

Gas-fired units burn a 'cleaner' fuel than coal, typically causing less maintenance expenses for units which burn gas compared to coal or oil. Counting associated fuel handling, operation and maintenance expenses, gas now is cheaper (per MMBTu) than coal.<sup>142</sup> Gas is cheaper for producing electricity than solar or wind power. Based on this economic "pull" of lower market prices, there is now a reason for utilities and independent power generators to dispatch and run less coal generation in favor of gas and/or renewable energy sources, thereby receiving some of the federal tax "push" and state renewable incentive RPS or net metering "push."

## 2. Additional Supply

The ability to access new reserves of natural gas in the United States has spurred hydraulic fracturing which could supply energy to the United States for nearly a century, contributing now to these historically low natural gas prices.<sup>143</sup> Hydraulic fracturing is the process in which a drill permeates the earth vertically to a predetermined depth, usually 5,000-8,000 feet.<sup>144</sup> The borehole is then turned horizontally allowing it to reach hundreds of feet of additional shale, previously inaccessible through conventional drilling methods.<sup>145</sup> Hydraulic fracturing is economically significant in that it allows for multiple wells to be constructed from a single platform or pad. Although this reduces surface impact due to decreased number of wells, horizontal wells typically cost \$3-5 million to complete.<sup>146</sup>

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141. See STEVEN FERREY, *LAW OF INDEPENDENT POWER* § 2.9 (34th ed. 2014).

142. See Figure 8.

143. *Environmental and Social Implications of Hydraulic Fracturing and Gas Drilling in the United States: An Integrative Workshop for the Evaluation of the State of Science and Policy Workshop Report*, 22 DUKE ENVTL. L. & POL'Y F. 306 (2012).

144. The concept of hydrofracking has been attempted since the late 1940s. Brigid Landy & Michael B. Reese, *Getting to "Yes": A Proposal for a Statutory Approach to Compulsory Pooling in Pennsylvania*, 41 ENVTL. L. REP. 11044 (2011), <http://www.elr.info/articles/vol41/41.11044.pdf>. The use of proppants such as sand or ceramic beads to hold the small cracks open was added. CALIFORNIA ENERGY COMM'N, SIGNIFICANT EVENTS IN THE HISTORY OF LNG, [http://www.energy.ca.gov/lng/documents/significant\\_events\\_lng\\_history.pdf](http://www.energy.ca.gov/lng/documents/significant_events_lng_history.pdf). The recovery rate is claimed by the natural gas industry to be around 80%. *Id.*

145. Joel Burcat, et al., *Dialogue: Nuts & Bolts of Marcellus Shale Drilling and Hydraulic Fracturing*, ENV'T & NATURAL RES. PRACTICE GRP. (2011), <http://www.elr.info/articles/vol41/41.10587.pdf>.

146. Montgomery Carl, *Hydraulic Fracking: History of an Enduring Technology* (Dec. 2010), <http://www.spe.org/jpt/print/archives/2010/12/10Hydraulic.pdf>.

The Marcellus Shale contains an estimated basin area of 95,000 square miles, and is the second largest reserve of natural gas in the world, only exceeded by a gas field which reaches Iran and Qatar.<sup>147</sup> The Marcellus Shale is significant in terms of its location and important because it is along the route of pipelines coming from Louisiana, Oklahoma, and Texas and is very close to Northeast consumer markets, which is the section of the nation which consumes much of the natural gas in the United States.<sup>148</sup> Gas-drilling operations in the Marcellus Shale use an average of 3,000,000 gallons of water in the process of drilling and fracturing a well.<sup>149</sup> In addition to the Marcellus shale in Pennsylvania, the Utica shale extends from Central New York into Eastern Ohio, the Bakken shale extends from Central Canada into North Dakota and Eastern Montana, the Barnett shale is in Texas, and the Mowry shale is in Wyoming.<sup>150</sup> These known shale deposits are displayed in Figure 9.

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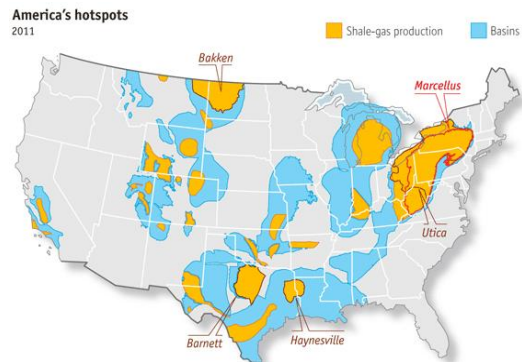
147. James R. Ladlee, *Why does Marcellus Shale Hold so much Natural Gas?*, <http://www.clintoncountypa.com/resources/CCNGTF/pdfs/articles/12.23.10%20%20Why%20does%20Marcellus%20Shale%20Hold%20so%20much%20Natural%20Gas.pdf>. (last visited Jan. 24, 2016).

148. See <http://www.naturalgas.org/shale/gotshale.asp>.

149. GROUND WATER PROT. COUNCIL, MODERN SHALE GAS DEVELOPMENT IN THE UNITED STATES: A PRIMER 64 (2009), [http://energy.gov/sites/prod/files/2013/03/f0/ShaleGasPrimer\\_Online\\_4-2009.pdf](http://energy.gov/sites/prod/files/2013/03/f0/ShaleGasPrimer_Online_4-2009.pdf); see also PA. STATE COOPERATIVE EXTENSION, WATER WITHDRAWALS FOR DEVELOPMENT OF MARCELLUS SHALE GAS IN PENNSYLVANIA 2 (2010), <http://pubs.cas.psu.edu/freepubs/pdfs/ua460.pdf>. When water is injected underground, it is mixed with additives such as friction reducers, biocides, and acids. While these chemicals typically compose less than 0.5% of the hydraulic fracturing fluid by volume, a well that consumes 3,000,000 gallons of water also uses approximately 15,000 gallons of additives, which are transported to well sites to be stored and mixed, and ultimately are part of the liquid waste. Daniel J. Soeder & William M. Kappel, *Water Resources and Natural Gas Production From the Marcellus Shale* 4 (2009), <http://pubs.usgs.gov/fs/2009/3032/pdf/FS2009-3032.pdf>. See also, Abby J. Kinchy & Simona L. Perry *Can Volunteers Pick Up the Slack? Efforts to Remedy Knowledge Gaps About the Atershed Impacts of Marcellus Shale Gas Development*, 22 DUKE ENVTL. L. & POL'Y F. 306 (2012).

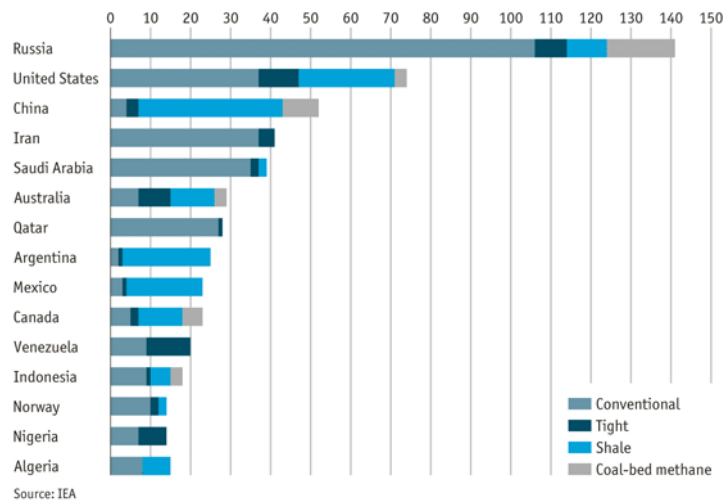
150. *Id.*

**Figure 9:  
U.S. Shale Gas Production**



The recently exploited shale gas now already contributes one-third of America’s gas supplies.<sup>151</sup> In terms of supply, the U.S. has now the second largest supply of gas in the world, as shown in Figure 10.<sup>152</sup>

**Figure 10:  
Recoverable Natural Gas Reserves<sup>153</sup>**



151. *An Unconventional Bonanza*, THE ECONOMIST (July 14, 2012), <http://www.economist.com/node/21558432>.

152. *Which Countries are the Largest Consumers and Producers?*, INT'L ENERGY AGENCY, <http://www.iea.org/aboutus/faqs/gas/> (last visited Dec. 9, 2014).

153. *Natural Gas Reserves*, THE ECONOMIST (June 5, 2012), <http://www.economist.com/blogs/graphicdetail/2012/06/focus>.

The reserves of shale gas in major world countries are displayed comparatively in Figure 11. This illustrates the potential self-sufficiency and export potential of select countries in the world. It is unclear whether natural gas will serve as a transition fuel for electricity production between historic coal-fired power and renewable power, or whether investing in infrastructure to accommodate increased natural gas development will lock nations into natural gas use for decades.<sup>154</sup> Natural gas currently is used for 24% of the United States total energy production,<sup>155</sup> and 29% of electric production.<sup>156</sup>

**Figure 11:  
Shale Gas Reserves  
(trillion cubic feet)**



In addition to the reduced dependence on foreign oil, substituted natural gas use has the potential to greatly reduce global warming.<sup>157</sup> The main byproduct when burning natural gas is carbon dioxide, a major greenhouse gas. Another natural gas byproduct, unburned methane, is molecule-for-molecule many times more potent than CO<sub>2</sub> in terms of global warming.<sup>158</sup> However, if a

154. *Workshop Report, Environmental and Social Implications of Hydraulic Fracturing and Gas Drilling in the United States: An Integrative Workshop for the Evaluation of the Science and Policy*, 22 DUKE ENVTL. L. & POL'Y F. 306 (2012).

155. NATURAL GAS, [http://www.ourenergypolicy.org/wp-content/uploads/2012/04/Natural\\_Gas\\_09-11-17\\_clean\\_0.pdf](http://www.ourenergypolicy.org/wp-content/uploads/2012/04/Natural_Gas_09-11-17_clean_0.pdf) (last visited Dec. 9, 2014).

156. *Id.* at 2-3.

157. Brad Plumer, *Can Natural Gas Help Tackle Global Warming? A Primer*, WASH. POST (Aug. 20, 2012), <http://www.washingtonpost.com/blogs/wonkblog/wp/2012/08/20/can-natural-gas-really-help-tackle-global-warming-heres-everything-you-need-to-know/>.

158. See STEVEN FERREY, UNLOCKING THE GLOBAL WARMING TOOLBOX: KEY CHOICES FOR CARBON RESTRICTION AND SEQUESTRATION 15, tbl. 2-1 (2010).

small amount leaks into the atmosphere in the drilling process, gas can cause even more global warming effect than coal.<sup>159</sup>

### 3. International Dimensions

As recently as year 2000, shale was not being exploited.<sup>160</sup> This has changed dramatically. Shale gas now contributes one-third of America's natural gas supplies and its share is increasing.<sup>161</sup> Before the discovery of these U.S. shale deposits, the country was preparing to become a significant importer of natural gas in the form of liquefied natural gas ("LNG").

The U.S. has been importing LNG for four decades.<sup>162</sup> The first LNG import facility began operation in Boston's Distrigas facility in 1971. There are twelve existing LNG import facilities located in the lower-48 states, up from three existing thirty years ago.<sup>163</sup> The forty proposed new LNG import facilities in the U.S., have now been partially realized with the dozen existing LNG import facilities in the U.S. now applying for LNG export licenses from the Federal Energy Regulatory Commission.<sup>164</sup> America has gone from having fast-depleting gas supplies to now having 100 years or more of gas supplies at current consumption rates.<sup>165</sup>

Only one-third of all gas is traded across borders, compared with two-thirds of oil.<sup>166</sup> Gas has no uniform global price, as does oil. In America, as well as in Britain and Australia, it is traded freely and prices are set through competition.<sup>167</sup> In continental Europe, most gas is delivered through pipelines and sold on long-term contracts linked to the price of oil, for which it used to be seen as a substitute. Asia relies heavily on imports of LNG<sup>168</sup> from Indonesia and

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159. Bill McKibben, *Why Not Frack*, N.Y. REV. OF BOOKS (Apr. 26, 2012).

160. *Gas Works: Shale Gas is giving a big boost to America's Economy*, THE ECONOMIST (July 14, 2012), <http://www.economist.com/node/21558459>.

161. *Id.*

162. Unconventional Bonanza, *supra* note 151.

163. *Gas Works*, *supra* note 160.

164. FED. ENERGY REGULATORY COMM'N, EXISTING FERC LNG IMPORT FACILITIES, <http://www.ferc.gov/industries/gas/indus-act/lng/lng-existing.pdf>.

165. *Gas Works*, *supra* note 160.

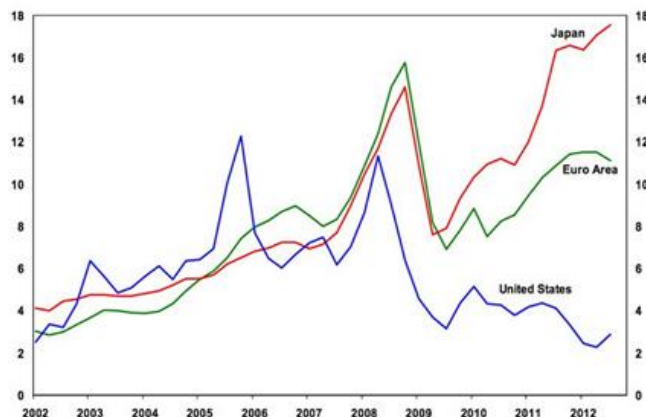
166. Unconventional Bonanza, *supra* note 151.

167. *Id.*

168. *Id.* "Stranded gas", too far from its markets to go down a pipe, can be turned into a liquid by cooling it to -162°C, shipped in specialist tankers and turned back into gas at its destination.

elsewhere, at higher prices competitive with oil prices.<sup>169</sup> The relative prices of imported natural gas in the United States, Europe, and Japan, are displayed in Figure 12.

**Figure 12:  
Natural Gas Prices by Region  
in US per Million Btus**



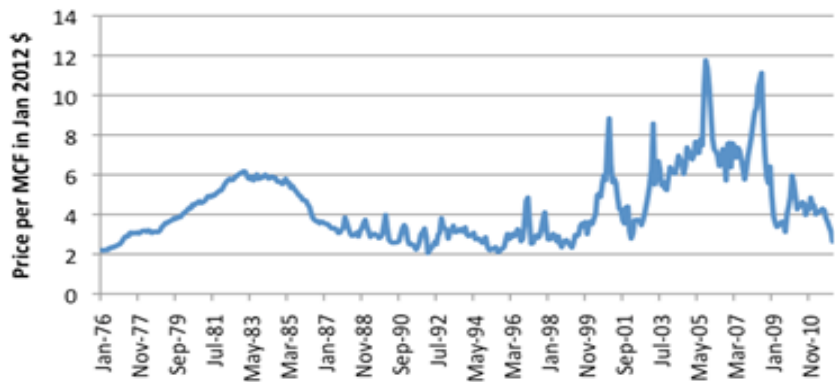
Because of gas shale supply, the real price of natural gas (adjusted to reflect inflation and expressed in constant real dollars) in 2012 is about the same as it was in 1976, as shown in Figure 13.

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169. Synapse Energy Economics, for the Civil Society Institute, *Water Constraints on Energy Production*, (Sept. 12, 2013), [http://0-op.bna.com.library.law.suffolk.edu/env.nsf/id/rlen9bgpzl/\\$File/Water%20Constraints%20on%20Energy%20Production.pdf](http://0-op.bna.com.library.law.suffolk.edu/env.nsf/id/rlen9bgpzl/$File/Water%20Constraints%20on%20Energy%20Production.pdf); see also Rachel Leven, *Renewable Energy Institute Urges Policy Makers to Encourage Water Research, Renewable Energy Use*, ENERGY & CLIMATE (BNA) (Sept. 12, 2013). “Stranded gas”, too far from its markets to go down a pipe, can be turned into a liquid by cooling it to -162°C, shipped in specialist tankers and turned back into gas at its destination.



**Figure 13:**  
**U.S. Natural Gas Prices, Jan. 2012**



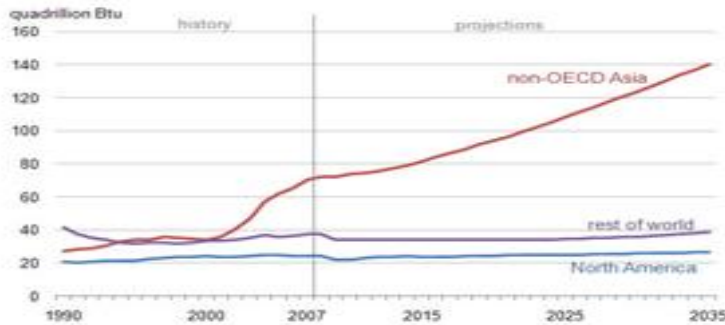
Compared to other parts of the world, because of the low price of natural gas in the U.S., the competitive, delivered price for LNG is also low, as illustrated in Figure 14.

**Figure 14:**  
**World LNG Estimated Sept. 2013 Landed Prices**



While gas use is increasing in the U.S. power sector, coal use is increasing internationally, as shown in Figure 15. In many developing countries, coal use for power generation is still the current choice for expansion.

**Figure 15:  
Who is Using More Coal?**



#### 4. The Driver of Price and Environmental Impacts

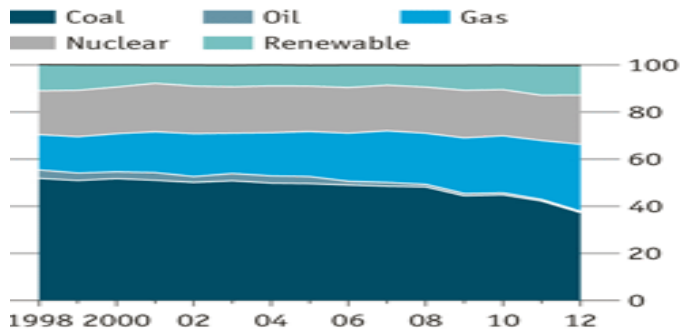
With the extra supply from shale deposits, gas prices are near their lowest levels in the past fifteen years.<sup>170</sup> U.S. natural gas prices over 35 recent years is shown in Figure 13. Current natural gas prices, expressed in constant dollars, are now about the same as where they were in 1976.<sup>171</sup> Gas and coal are changing their positions of fuel dominance. From 2006 to 2012, gas use increased 25%, moving from providing 20% of America's electricity to nearly 25%, with coal declining from more than half its traditional use a few years before to 36% in 2012.<sup>172</sup> U.S. power production, showing the decrease in use of coal, and commensurate increase in use of gas and renewable power, is shown in Figure 16. Coal's loss is offset by natural gas' gain.

170. Gas Works, *supra* note 160.

171. *Id.*

172. *Id.* In 2011 coal-generated power was down to 42%, its lowest level since at least 1949, when records began. *Id.*

**Figure 16:  
U.S. Electricity Generation Mix**



The capacity for U.S. power generation is shown in Figure 3. Natural gas generation capacity has now exceeded coal generation capacity by almost 50%. Yet because of the marginal cost of operation, more coal-fired generation has traditionally been dispatched and operated. Now, the actual generation amount of both coal and gas-fired power are closer to being equal.<sup>173</sup>

There are ripple effects to other feed-stock uses of fossil fuels. The petrochemicals industry uses fossil fuels to make chemicals such as methanol and ammonia for fertilizer<sup>174</sup> and other raw materials less expensive for major sectors of the economy, including automobiles, agriculture, household goods, and construction.<sup>175</sup> This cumulative effect could add 0.5% a year to the United States' GDP over the next five years, according to UBS.<sup>176</sup>

Coal-fired generation has decreased from 50% of total U.S. generation a decade ago, to less than 40% today.<sup>177</sup> With today's low natural gas costs around \$4/mcf there is 3.3 cents of fuel cost in a kilowatt hour of electricity plus operations and maintenance without any contribution to the gas facility's capital costs. None of the legal and regulatory impacts itemized above have yet reduced that amount of coal use and generation, but promise to do so in the future.

In the next five years, under increasing competition from shale gas and the Environmental Protection Agency's regulations on

173. *See supra* text at notes 157 and 173.

174. *Gas Works, supra* note 160. Switching naphtha, derived from oil, to ethane, derived from gas, has price advantages.

175. *Id.* This could yield one million additional American factory jobs by 2025. *Id.*

176. *Id.* It could also save the average American household almost \$1,000 a year. *Id.*

177. Stephen Lacey, *U.S. Coal Generation Drops 19 Percent In One Year, Leaving Coal with 36 Percent Share of Electricity*, CLIMATE PROGRESS (May 14, 2012), <http://thinkprogress.org/climate/2012/05/14/483432/us-coal-generation-drops-19-percent-in-one-year-leaving-coal-with-36-percent-share-of-electricity/>.

power plants emissions, U.S. coal demand will fall to a 30-year low, while weak economic growth, a shift to renewable energies and improved energy efficiency will trim European demand, according to IEA Executive Director Maria van der Hoeven.<sup>178</sup>

Figure 8 compares the declining cost of natural gas in the U.S. with coal prices. Because of substitution of gas-fired power for coal-fired power, America's GHG emissions decreased 450 million tons annually, the biggest decline of any country.<sup>179</sup> Natural gas combustion produces significantly less emissions of CO<sub>2</sub> and less of the four of the six criteria air pollutants emitted from fossil-fuel fired power generation and regulated by federal law and EPA:<sup>180</sup>

- the amount of carbon dioxide produced by natural gas is about 25% less than oil and almost half as much as coal
- carbon monoxide (92 parts per billion compared to roughly 450 ppb for oil or coal)
- sulfur dioxide (1 ppb for gas versus versus 1,122 ppb for oil and 2,591 ppb for coal)
- almost no nitrogen oxide which burning other fossil fuels does release
- almost no particulate matter.

If the obstacles can be overcome, more gas and lower prices will mean a rise of 50% in global demand for gas between 2010 and 2035, according to the International Energy Agency ("IEA").<sup>181</sup> The IEA forecasts that abundant use of gas could raise atmospheric concentrations of CO<sub>2</sub> to 650 parts per million causing temperature to rise 3.5 degrees Celsius, which is more than many experts believe is safe.<sup>182</sup>

### *B. Renewable Power Becomes More Cost-Competitive*

There has been a radical change in the cost of distributed renewable power generation. A big change is ushered in through the technological and cost declines of wind and solar photovoltaic ("PV")

178. Rick Mitchel, *IEA Says Climate Pledges Won't Halt Global Growth in Coal Demand to 2019*, ENV'T REPORTER (BNA) (Dec. 15, 2014).

179. Alex Trembath, *Coal Killer: How Natural Gas Fuels the Clean Energy Revolution*, BREAKTHROUGH INST., 4 (2013), [http://thebreakthrough.org/images/main\\_image/Breakthrough\\_Institute\\_Coal\\_Killer.pdf](http://thebreakthrough.org/images/main_image/Breakthrough_Institute_Coal_Killer.pdf).

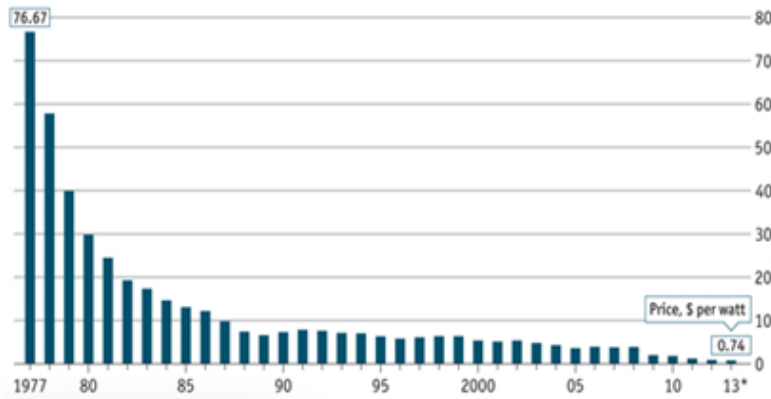
180. See STEVEN FERREY, ENVIRONMENTAL LAW: EXAMPLES & EXPLANATIONS 575 (6th ed. 2013).

181. Unconventional Bonanza, *supra* note 151.

182. Bill McKibben, *supra* note 159.

distributed generation. The cost to install photovoltaic solar panels has fallen dramatically by about 60% in ‘hard’ costs. PV module prices have experienced a decline from ~\$1.90 watt in 2009 to \$0.70/watt, and lower in some regions of the world.<sup>183</sup> Inverter prices, for the equipment necessary to convert photovoltaic direct current to alternating current so that it can be moved on the grid, have also declined by more than 60% in cost from \$0.60-\$1.00+/watt in 2005 to under \$0.20/watt in 2013.<sup>184</sup> In the United States, non-hardware “soft” costs for residential systems now account for over 50% of total system.<sup>185</sup> The dramatically reduced price of solar PV cells is shown in Figure 17.

**Figure 17:  
Price of PV Cells**



Since 2008, the price of the photovoltaic panels has fallen by 75%, and solar installations have multiplied by 1,000%.<sup>186</sup> In the United States, there were more than 300,000 “distributed” behind-the-meter solar PV installations installed in 2012, almost all in the forty-four net metering states.<sup>187</sup> One additional rooftop solar

183. Wilson Rickerson, *Residential Prosumers-Drivers and Policy Options*, IEA-RETD 9 (June, 2014) (relying on Jade Jones, *Regional PV Module Pricing Dynamics: What You Need to Know*, PV NEWS 32 (12), 1, 9–10 (2013)).

184. *Id.* (relying on Ian Clover, *IHS Cuts Global Inverter Market Forecast in Face of Dramatic Price Drops*, PV MAGAZINE (Oct. 16, 2013)). See also Navigant Consulting Inc., *A Review of PV Inverter Technology Cost and Performance Projections*, NREL/SR-620-38771, National Renewable Energy Laboratory (2006).

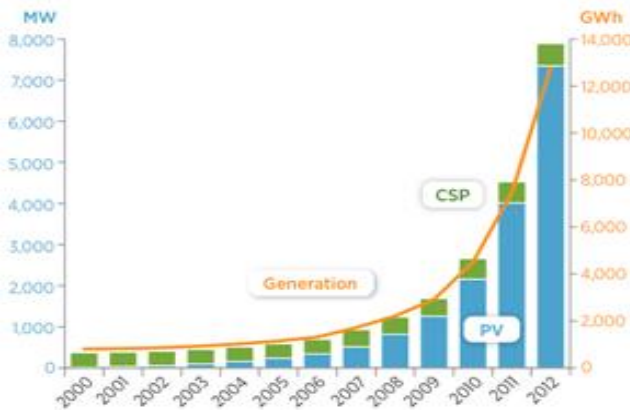
185. *Id.* at 72 (relying on Joachim Seel, et al., *Why are Residential PV prices in Germany So Much Lower than in the United States? A Scoping Analysis* (2013) (noting that costs are \$3.34/watt in 2011 in the U.S., compared to \$0.62/watt in Germany)).

186. Ker Than, *As Solar Power Grows, Dispute Flares Over U.S. Utility Bills*, NAT’L GEO. (Dec. 24, 2013), <http://news.nationalgeographic.com/news/energy/2013/12/131226-utilities-dispute-net-metering-for-solar/>.

187. *Id.*

system was being installed every four minutes in 2013 in the United States.<sup>188</sup> The sheer amount of solar is impressive, though the eight GW of solar installed in the U.S. today is still less than 1% of U.S. electricity production.<sup>189</sup> This has allowed the solar photovoltaic market to grow at an average rate of more than 40% each year since 2000.<sup>190</sup> This growth is shown in Figure 18.

**Figure 18:  
U.S. Solar Development**



Solar energy is forecast to be cost competitive with retail electricity prices in forty-seven U.S. states by 2016, with maintenance of current subsidies, according to Deutsche Bank.<sup>191</sup> These subsidies can increase the value of solar projects by 700% compared to other projects.<sup>192</sup> With significant subsidies, solar power already has reached grid parity in Arizona, California, Connecticut, Hawaii, Nevada, New Hampshire, New Jersey, New Mexico, New York, and Vermont.<sup>193</sup> Demand for rooftop solar paired with energy storage systems is predicted to reach new installations worth \$1 billion in the U.S. within four

188. *Id.*

189. Peter Kind, *Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business*, EDISON ELEC. INST. 1 (Jan. 2013), <http://www.eei.org/ourissues/finance/documents/disruptivechallenges.pdf>.

190. *Id.* at 10.

191. Ari Natter, *Solar Energy to Reach 'Grid Parity' in Nearly All States by 2016*, *Deutsche Bank Predicts*, BNA (Oct. 27, 2015). This is based on the assumption that the cost of solar systems will decline by about 20% more from less than \$3 per watt installed to less than \$2.50 per watt installed by 2016, resulting in a price in those states from 9-14 cents/Kwh, and lowered financing cost for solar projects. The average cost of residential electricity in the U.S. in 2013 was 12.12 cents/Kwh, and was 8.95 cents/Kwh in 2004. These assumptions factor in the 30 percent investment tax credit for solar energy, which is scheduled to drop to 10 percent at the end of 2016.

192. Author's calculation.

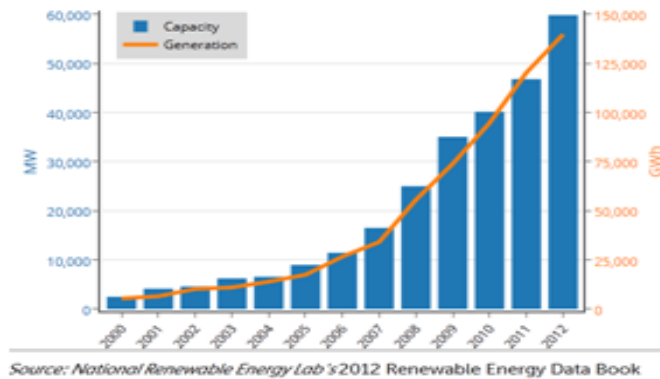
193. Natter, *supra* note 192.

years; approximately 318 Mw of solar-storage capacity will be in operation in the U.S. by 2018.<sup>194</sup>

Wind power growth since 2000, on a curve similar to that for solar energy development, is illustrated in Figure 19. Since 1999, the Pacific Northwest alone has installed more than 7,000 Mw of additional wind generating capacity,<sup>195</sup> which is expected to increase to 14,000 Mw by 2020.<sup>196</sup> While wind generation is not a comparable base load source of energy as is coal, there is an ongoing substitution phenomenon. Coal-fired generation has decreased from 50% of total U.S. generation a decade ago, to slightly over 40% in 2012 and less than 40% today.<sup>197</sup>

Wind generating capacity in the U.S. is forecast by the U.S. Department of Energy to increase by about 23% between 2014 and 2016, with utility-scale solar capacity to increase more than 60% in the same period.<sup>198</sup> 6.4% of electricity generation comes from hydropower and 6.7% from other renewable energy sources, the latter of which is expected to increase to 7.9% by the end of 2016.<sup>199</sup>

**Figure 19:  
U.S. Wind Development**



194. Ehren Goossens, *Solar-With-Batteries Market to Hit \$1 Billion In U.S. by 2018*, *Research Company Projects*, ENV'T REP. (BNA) (Dec. 19, 2014).

195. BPA Final Record of Decision in Docket OS-14 – Oversupply Rate Proceeding at P-1, <http://www.bpa.gov/Finance/RateCases/OS-14RateProceeding/Pages/default.aspx>.

196. Comments of BPA in FERC Docket No. RM10-11-000 at 1 (April 12, 2010).

197. Lacey, *supra* note 177.

198. Ari Natter, *Installation of Wind, Solar Facilities to Lead Gains in Power From Renewables*, *EIA Says*, ENERGY & CLIMATE REP. (BNA) (Jan. 13, 2015). About half of this new solar capacity is expected to be added in California.

199. *Id.*

*C. Mitigating the Impact  
of Intermittency of Certain  
Renewable Power*

Base-load generation is usually provided by a coal-fired plant, and these plants run continuously because they have long start-up and cool-down periods.<sup>200</sup> Base-load generation typically is supplied by a coal-fired or nuclear plant that runs continuously because these plants have slow start-up and require cool-down times if not run continuously.<sup>201</sup> Substitution of wind and solar power, both intermittent and uncontrollable sources of power over time, will be dispatched in lieu of conventional base-load power.

New, intermittent wind and solar renewable resources cannot supply reliable base load power, as they demonstrate a relatively low availability factor in the 10% to 40% range of all hours during a week or month.<sup>202</sup> Wind generators have plant effective capacity factors of 20% to 30%.<sup>203</sup> Wind and solar are not reliable as peak power, because they are not available reliably on call. The intermittency of solar power on a daily basis is illustrated in Figure 20, showing a 4:1 oscillation of power output hour-by-hour.

According to the National Energy Resource Council (“NERC”), which is responsible for maintaining U.S. grid reliability, regulating and sequestering carbon emissions will compromise grid reliability.<sup>204</sup> Adding too many sustainable resources could negatively affect grid reliability, until cost-effective electricity storage is perfected.<sup>205</sup> There is debate as to how much is too much: studies conducted by NREL have shown that more than one-third of the electricity in the western United States could

200. See U.S. ENERGY INFO. ADMIN., THE CHANGING STRUCTURE OF THE ELECTRIC POWER INDUSTRY 2000: AN UPDATE, EIA-0562(00) 8–13 (2000), [http://www.eia.gov/cneaf/electricity/chg\\_stru\\_update/update2000.pdf](http://www.eia.gov/cneaf/electricity/chg_stru_update/update2000.pdf) (discussing the difficulty of bringing base-load generators online and offline, and discussing coal as the primary source for U.S. generation because of its use as a base-load-generation fuel).

201. See U.S. ENERGY INFO. ADMIN., ELECTRICITY IN THE UNITED STATES—GENERATION, SALES & CAPACITY, [http://www.eia.gov/energyexplained/index.cfm?page=electricity\\_in\\_the\\_united\\_states#tab2](http://www.eia.gov/energyexplained/index.cfm?page=electricity_in_the_united_states#tab2) (last visited Jan. 24, 2016) [hereinafter *Electricity in the United States*] (explaining base-load generating units).

202. See FERREY, LAW OF INDEPENDENT POWER, *supra* note 141, § 2:11 (noting inability of intermittent sources to serve as base-load resource).

203. WORLD NUCLEAR ASS’N, RENEWABLE ENERGY AND ELECTRICITY, <http://www.world-nuclear.org/info/Energy-and-Environment/Renewable-Energy-and-Electricity/> (last visited Jan. 24, 2016).

204. Charles Davis, *Public Utilities Fear that GHG Cuts Might Threaten Electricity Supply, Reliability*, CLEAN ENERGY REP. (July 28, 2008), <http://www.cleanenergyreport.com>.

205. Jeff Postelwait, *NERC: Climate Change Rules Could Hurt Generation Reliability*, POWER ENG’G (Nov. 18, 2008), [http://pepei.pennnet.com/Articles/Article\\_Display.cfm?ARTICLE\\_ID=345518&p=6](http://pepei.pennnet.com/Articles/Article_Display.cfm?ARTICLE_ID=345518&p=6).



come from wind and solar power without installing significant amounts of backup power or new interstate transmission lines.<sup>206</sup>

Peak power demand has been increasing over time as a percentage of average demand. In 2008, New England's grid operator, ISO New England, had about 31,024 megawatts of rated summer generating capacity to serve a peak demand of 27,970 megawatts.<sup>207</sup> This, however, did not allow for the recommended 15% to 20% surplus for equipment repairs and unit unavailability.<sup>208</sup> Moreover, the peak power demand has been increasing over time as a percentage of average demand.<sup>209</sup> In 1980, New England peak capacity was 154% of average load, which increased to 159% in 1990, and further increased to 175% in 2000.<sup>210</sup> Commentators predict that power demand peaks will continue an upward trend.<sup>211</sup> Climate change and greater cooling requirements are likely to exacerbate these trends, as a function of increasing air-conditioning usage during the summer peak days. New York City, for example, has a peak demand almost twice its average load.<sup>212</sup>

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206. GE ENERGY, WESTERN WIND AND SOLAR INTEGRATION STUDY 314-15 (May, 2010), <http://www.nrel.gov/docs/fy10osti/47434.pdf>.

207. FERC, NEW ENGLAND ELECTRIC MARKET: OVERVIEW AND FOCAL POINTS, <https://www.ferc.gov/market-oversight/mkt-electric/new-england/2007/05-2007-elec-ne-archive.pdf>. (last visited Jan. 24, 2016).

208. *Id.* For current data on generating capability and demand, see ISO NEW ENG., GENERATION AND RESOURCES, [http://www.iso-ne.com/genrntion\\_resrcs/index.html](http://www.iso-ne.com/genrntion_resrcs/index.html).

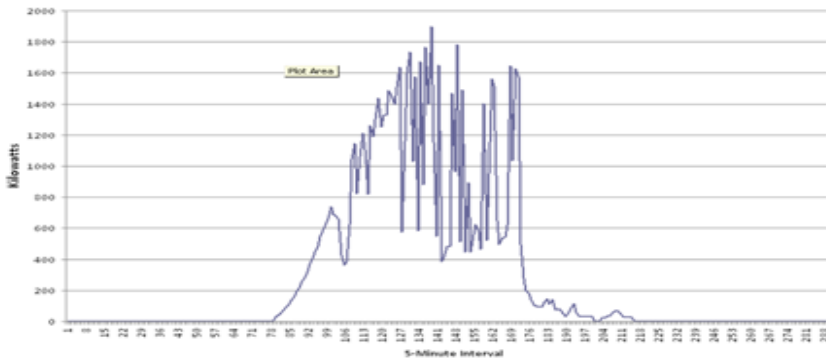
209. *See* Braintree Electric Light Dep't, No. EFSB 07-1/D.T.E./D.P.U. 07-5, at 77 (Mass. Energy Facilities Siting Board Feb. 29, 2008), <http://web1.env.state.ma.us/DPU/FileRoomAPI/api/Attachments/Get/?path=07-5%2FEFSB071%2F22908findc.pdf>.

210. *See* GORDON VAN WEILE, ENSURING LONG TERM RELIABILITY OF NEW ENGLAND'S REGIONAL ELECTRICITY SYSTEM, ISO NEW ENG., 15 (2006), [http://www.iso-ne.com/pubs/pubcomm/pres\\_spchs/2006/iso-ne\\_platts\\_gvw.pdf](http://www.iso-ne.com/pubs/pubcomm/pres_spchs/2006/iso-ne_platts_gvw.pdf).

211. *See* ISO NEW ENG., 2006-2015 FORECAST REPORT OF CAPACITY, ENERGY, LOADS, AND TRANSMISSION 1-2 (2006), [http://www.iso-ne.com/trans/celt/report/2006/2006\\_CELT\\_Report.pdf](http://www.iso-ne.com/trans/celt/report/2006/2006_CELT_Report.pdf).

212. Lisa Wood, *New York Readies for Stimulus Funds with Order to Utilities on Metering Pilots*, ELEC. UTIL. WEEK, Feb. 16, 2009, at 33.

**Figure 20:  
Daily Solar Output, Mass.**



The existing modern back-up power peaking capacity is dramatically short of where it needs to be, despite the fact that power systems have enough total resources.<sup>213</sup> This shortfall is compounded by a lack of either dual-fuel or less-polluting gas-fuel alternatives.<sup>214</sup> After analyzing this situation, ISO New England concluded that “[a] lack of fast-start resources in transmission-constrained subareas could require the ISO to use more costly resources to provide these necessary services. In the worst case, reliability could be degraded.”<sup>215</sup>

Most of the existing back-up peaking capacity currently installed in the grid is not the newer aero-derivative quick-start technology.<sup>216</sup> Quick-start technology allows the generator to go from a cold start to full power production in less than ten minutes,<sup>217</sup> which falls within the most demanding category for start time

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213. *Cf.* ISO NEW ENG., REGIONAL SYSTEM PLAN 5 (2006), [http://iso-ne.com/static-assets/documents/trans/rsp/2006/rsp06\\_final\\_public.pdf](http://iso-ne.com/static-assets/documents/trans/rsp/2006/rsp06_final_public.pdf) (noting that a system needs more than just a certain level of resources to meet demand for electricity; it also needs certain types of resources).

214. *See id.*

215. REGIONAL SYSTEM PLAN, *supra* note 213.

216. Regarding the small amount of peaking or backup generation in systems, see, for example, Montgomery Energy Billerica Power Partners, No. EFSB 07-2, 2009 WL 1532821, at \*10, \*13 (Mass. Energy Facilities Siting Bd. Mar. 3, 2009). The bulk of fossil-fueled power generation was built prior to 1990, when aeroderivative quick-start technology began to be used for power generation. U.S. ENERGY INFO. ADMIN., EXISTING ELECTRIC GENERATING UNITS BY ENERGY SOURCE, 2008 (2008), <http://www.eia.gov/cneaf/electricity/page/capacity/capacity.html>. Demand for additional generating technology has only been increasing at one to two percent annually, so new additions during the past two decades constitute a distinct minority of installed generation. U.S. ENERGY CONSUMPTION, MAXWELL SCH. OF SYRACUSE UNIV., <http://wilcoxon.maxwell.insightworks.com/pages/804.html> (last updated Apr. 10, 2006).

217. Braintree Electric Light Dep't, No. EFSB 07-1/D.T.E./D.P.U. 07-5, at 94 n.67 (Mass. Energy Facilities Siting Board Feb. 29, 2008).

maintained by grid system operators.<sup>218</sup> Power is therefore nearly instantaneously available, avoiding the need to spin and operate the generator before consumers demand that power.<sup>219</sup>

Conventional, non-aero-derivative generators take hours to bring their temperatures up gradually from a cold start, and similarly must slowly ramp down their temperatures when they shut down.<sup>220</sup> These “spinning,” non-quick-start reserve units also expel a less contained more profligate profile of environmental emissions when operating at partial capacity.<sup>221</sup> One analysis of coal-plant cycling against intermittent renewable power’s hourly variations found that emissions during cycling were 8% higher for sulfur dioxide and 10% higher for nitrogen oxides than emissions of the same compounds during constant operation.<sup>222</sup> Moreover, while generators spin to increase their temperatures to their design values, the power that these units produce may or may not be used by the grid, thus incurring power “uplift” costs to the grid.<sup>223</sup> The grid (and, ultimately, power consumers) incurs this multiple loss whether or not these units are ever required to supply power during the peak time of the day.<sup>224</sup>

#### IV. “PUSH” OR “PULL” ECONOMICS AND KEY TECHNOLOGY

##### *A. Tax Bases*

The tax base and the rate base are very different species. While the “pull” of declining market prices in a competitive market lowers ultimate prices to consumers, the “push” of regulatory incentives for particular types of power is passed on to consumers and raises costs in two different ways. First, federal tax credits for certain types of

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218. *Id.* at 94. ISO New England has separate reserve markets for ten-minute nonspinning reserve capacity and thirty-minute operating reserves. ISO NEW ENG., ANCILLARY SERVICES MARKET ENHANCEMENTS WHITE PAPER 3 (2004), [http://www.iso-ne.com/pubs/whthpr/asm\\_wht\\_paper.pdf](http://www.iso-ne.com/pubs/whthpr/asm_wht_paper.pdf). Many units have to “spin” to meet either of these criteria. Michael Milligan & Brendan Kirby, *Utilizing Load Response for Wind and Solar Integration and Power System Reliability* 7 (2010), <http://www.nrel.gov/docs/fy10osti/48247.pdf>.

219. *Cf.* Braintree Electric Light Dep’t, No. EFSB 07-1/D.T.E./D.P.U. 07-5 at 79 (Mass. Energy Facilities Siting Board Feb. 29, 2008) (explaining that the reserve market serves as a “real-time backup supply to ensure continuity of service to system customers even in the event of an unexpected outage or other system contingency”).

220. *See id.* at 97.

221. Montgomery Billerica Energy Power Partners, No. EFSB 07-02, 2009 WL 1532821 at \*12 (Mass. Energy Facilities Siting Board Mar. 3, 2009).

222. Nicolas Puga, *The Importance of Combined Cycle Generation Plants in Integrating Large Levels of Wind Power Generation*, 23 ELEC. J. 33, 38 (2010).

223. *See id.* at 34.

224. *See id.*

power decrease the receipt of federal corporate taxes, increasing the share of federal revenues which must be raised through personal income or other taxes or fees. Second, state incentives for certain energy supply technologies, such as renewable portfolio standards or net metering, are passed through entirely as additional expenses not to taxpayers, but to utility rate payers.<sup>225</sup> This raises the retail price of electricity to consumers.

States with a significantly larger amount of lower cost hydroelectric, nuclear, coal, and gas-fired power, such as California,<sup>226</sup> oddly have the highest prices of retail electricity. California, with one of the most assertive regulatory incentives for renewable power, and a disproportionate amount of lower-cost power supply, has the highest consumer costs for retail electricity of any of the contiguous 48 states.<sup>227</sup> Some of this is due to the significant costs of the “push” of state incentives for certain types of power, all of which result in higher retail consumer prices for the power.

Federal income tax taxpayers paying for federal tax incentives are not the same group as utility electricity ratepayers. Almost everyone in America is a consumer of electricity and thus a utility ratepayer. However, approximately 50% of the American population does not pay income tax.<sup>228</sup> Federal and most state income taxes typically have “no tax” thresholds and deductions, which exempt certain lower-income taxpayers from any income tax.<sup>229</sup> So, federal tax incentives are indirectly borne by that approximately half of the population which pay personal income taxes on a progressive tax basis with increasing marginal income tax rates based on amount of income.

### *B. Rate Bases*

By contrast, electricity is priced as a commodity and service for which every consumer pays for the value. There are different rates for different groups of electricity consumers, such as commercial, residential, industrial, and municipal consumers. Each group rate is designed to reflect the costs of serving these consumers.

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225. Tom Tiernan, *Attention to Good Standby Rates Seen Key as Distributed Generation Plays Bigger Role*, ELEC. UTIL. WK., Dec. 31, 2012, at 10.

226. CAL. ENERGY ALMANAC, TOTAL ELECTRICITY SYSTEM POWER, [http://energyalmanac.ca.gov/electricity/total\\_system\\_power.html](http://energyalmanac.ca.gov/electricity/total_system_power.html) (last visited Jan. 24, 2016).

227. *Id.*

228. Michelle Hirsch, *The 50% of Americans Who Don't Pay Income Tax Will Never be a Good Revenue Source*, BUSINESS INSIDER (Aug. 31, 2011), <http://www.businessinsider.com/who-pays-no-taxes-and-why-theyre-no-pot-of-gold-2011-8>.

229. For example, the Massachusetts state income tax exempts all persons from paying any state income tax if they have less than \$8,000 of adjusted annual income.

Electricity rates can be somewhat tailored by policy considerations, but not to the degree or extent of progressive federal income taxes. There is no exemption from payment liability or 'free' amount of power in traditional retail utility rate tariffs; all accounts showing a power purchase are collectible pursuant to American law. Utility rates are designed to recover the cost of each commodity and service provided.<sup>230</sup> In principle, every consumer pays for the electricity that he or she consumes.

The retail price of electricity that one is charged is based on its reasonable cost of production determined at the rate proceeding of a state energy regulatory commission. Recovered retail prices include transmission and distribution costs, as well as the cost of generation. The obligation of state retail electricity regulatory commissions is to fairly and equitably allocate investments and expenses of regulated utilities. Public utility law tracks the legal obligation to allocate costs and benefits of electricity service in a manner that is "fair and equitable," "not unduly preferential," "just and reasonable," and "non-discriminatory" among consumers.<sup>231</sup> Table 6 provides an overview of selected state regulatory law which establishes rate principles of selected states.<sup>232</sup>

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230. *How Rates are Set*, CONSUMERS ENERGY, <http://www.consumersenergy.com/content.aspx?id=4589> (last visited Jan. 24, 2016).

231. Paul Hibbard, et al., *EPA's Clean Power Plan: States' Tools for Reducing Costs and Increasing Benefits to Consumers*, ANALYSIS GRP. 29 (July 2014), [http://www.analysisgroup.com/uploadedfiles/content/insights/publishing/analysis\\_group\\_epa\\_clean\\_power\\_plan\\_report.pdf](http://www.analysisgroup.com/uploadedfiles/content/insights/publishing/analysis_group_epa_clean_power_plan_report.pdf).

232. *Id.* The source at Appendix 4 contains more detailed summaries for the states included in the case studies.

**Table 6:**  
**State Ratemaking Practices Addressing**  
**Consumer Impact, Equity and Fairness<sup>233</sup>**

State	Bill or Recent Rate Case	Description
<b>California</b>	Public Interest Code, Division 1, Part 1, Chp. 4, 739.6	"The commission shall establish rates using allocation principles that fairly and reasonably assign to different customer classes the costs of providing service to those customer classes, consistent with the policies of affordability and conservation."
<b>Florida</b>	Florida Statute Title XXVII	"In fixing fair, just, and reasonable rates for each customer class, the commission shall, to the extent practicable, consider the cost of providing service to the class, as well as the rate history, value of service, and experience of the public utility; the consumption and load characteristics of the various classes of customers; and public acceptance of rate structures."
<b>Illinois</b>	Illinois Statute 220 ILCS 5/1-102	"...the health, welfare and prosperity of all citizens require the provision of adequate, efficient, reliable, environmentally safe and least-cost public utility services at prices which accurately reflect the long-term cost of such services at prices which accurately reflect the long-term cost of such services and which are equitable to all citizens" and that "variation in costs by customer class and time of use is taken into consideration in authorizing rates for each class."
<b>Iowa</b>	State of Iowa (Mar. 17, 2014)	Explaining a sub-rule related to new RPU-2013-0004 provision " . . . is designed to insure that no customer receives any 'entitlement' to currently existing facilities, and that all customers pay their appropriate share of the utility's cost."
<b>Massachusetts</b>	Rate Case Order-Docket 11-01 (Aug. 1, 2011)	"The rate structure for each rate class is a function of the cost of serving that rate class; and how rates are designed to recover the cost to serve that rate class. The Department has determined that the goals of designing utility rate structures are to achieve efficiency and simplicity as well as to ensure

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233. *Id.*

		continuity of rates, fairness between rate classes, and corporate earnings stability.”
<b>Minnesota</b>	Minnesota Statute § 216 B.03	“Every rate made, demanded, or received by any public utility, or by any two or more public utilities jointly, shall be just and reasonable. Rates shall not be unreasonably preferential, unreasonably prejudicial, or discriminatory, but shall be sufficient, equitable, and consistent in application to a class of consumers.”
<b>New Mexico</b>	NMSA 1978, § 62-8-1	“Every rate made, demanded or received by any public utility shall be just & reasonable.”
<b>North Carolina</b>	§62 and §133.8 Subs. h-4	“To provide just and reasonable rates and charges for public utility services without unjust discrimination, undue preferences or advantages...”
<b>Texas</b>	Chp. 25, subchp. J, § 25.234 (effective July 5, 1999)	“Rates shall not be unreasonably preferential, or discriminatory, but shall be sufficient, equitable, and consistent in application to each class of customers, and shall be based on cost.”

The principle of maintaining equitable charges to each customer group for the benefits received, across the country is reflected even in utilities providing energy efficiency services paid with rate payer money which help consumers consume less electricity. Table 7 illustrates the amounts collected through consumer utility rates for energy efficiency, as well as the average dollars spent on residential, commercial, and industrial customer classes for energy efficiency programs devoted to each customer group. Relative expenditures for these classes is 46%, 40%, and 14%, respectively-which parallels the total revenues collected for overall utility service from each customer rate class-45%, 37%, and 18%, respectively.<sup>234</sup>

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234. *Id.* at 31.

**Table 7:**  
**State Energy Efficiency Spending by**  
**Customer Class Compared to Revenues, 2012<sup>235</sup>**

State	Residential	Commercial	Industrial	Total
Alabama	\$9,172	\$4,625	\$24,131	\$37,928
Alaska	\$363	\$148	\$0	\$511
Arizona	\$65,678	\$70,216	\$409	\$136,303
Arkansas	\$18,670	\$9,834	\$40,696	\$69,200
California	\$488,578	\$559,873	\$144,861	\$1,193,312
Colorado	\$44,040	\$67,717	\$13,452	\$125,209
Connecticut	\$58,083	\$47,665	\$14,742	\$120,490
Delaware	\$1,860	\$0	\$0	\$1,860
Dist. of Col.	\$8,423	\$8,760	\$0	\$17,183
Florida	\$281,810	\$100,270	\$43,436	\$425,516
Georgia	\$30,794	\$13,128	\$11,344	\$55,266
Hawaii	\$2,328	\$4,555	\$185	\$7,068
Idaho	\$15,859	\$15,734	\$32,540	\$64,133
Illinois	\$78,368	\$75,671	\$2,658	\$156,697
Indiana	\$59,112	\$20,475	\$20,475	\$99,467
Iowa	\$45,851	\$25,852	\$51,943	\$123,646
Kansas	\$10,767	\$3,427	\$5,869	\$20,063
Kentucky	\$29,318	\$8,358	\$2,307	\$39,983
Louisiana	\$1,065	\$3	\$0	\$1,068
Maine	\$7,630	\$9,356	\$4,579	\$21,565
Maryland	\$161,413	\$66,413	\$280	\$227,877
Michigan	\$71,543	\$63,338	\$11,008	\$145,889
Minnesota	\$78,367	\$94,601	\$52,695	\$225,663
Mississippi	\$3,725	\$1,567	\$5,052	\$10,344
Missouri	\$17,576	\$16,020	\$254	\$33,850
Montana	\$6,720	\$9,112	\$15	\$15,397
Nebraska	\$6,413	\$7,197	\$7,741	\$20,013
Nevada	\$20,013	\$15,461	\$0	\$35,474
New Hamp.	\$9,447	\$10,888	\$339	\$20,674
New Jersey	\$48,397	\$12,867	\$3,067	\$64,331
New Mex.	\$14,890	\$10,501	\$2,250	\$27,641
New York	\$338,506	\$31,836	\$486,577	\$856,919
North Car.	\$84,693	\$55,883	\$12,510	\$153,086
North Dak.	\$8,263	\$9,618	\$1,998	\$19,879
Ohio	\$71,711	\$56,782	\$36,361	\$164,854
Oklahoma	\$26,155	\$12,118	\$1,866	\$40,139
Oregon	\$40,587	\$49,355	\$29,584	\$119,526
Pennsylv.	\$140,410	\$89,219	\$60,161	\$289,790
Rhode Isl.	\$20,227	\$18,740	\$11,486	\$50,453
South Car.	\$41,125	\$19,832	\$12,562	\$73,519
South Dak.	\$4,206	\$1,701	\$1,082	\$6,989
Tennessee	\$22,789	\$15,544	\$19,097	\$57,430
Texas	\$121,730	\$78,628	\$7,381	\$207,739
Utah	\$24,578	\$14,708	\$8,567	\$47,853

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235. *Id.*



Vermont	\$14,474	\$19,346	\$0	\$33,820
Virginia	\$21,184	\$6,614	\$716	\$28,514
Washington	\$99,204	\$85,276	\$21,447	\$205,927
West Virg.	\$40,351	\$30,600	\$46,831	\$117,782
Wisconsin	\$40,351	\$30,600	\$46,831	\$117,782
Wyoming	\$1,784	\$1,762	\$1,288	\$4,834

Electricity is priced based on its reasonable cost of production and the translation of total cost to “just and reasonable” rates that reflect these costs.<sup>236</sup> Gross revenues must cover the reasonable cost of running the electric system, and the allocation of rates among customer classes to raise those revenues must be made based on the principles of tracking and reflecting costs of serving each reasonably distinct class of customers.<sup>237</sup> Each specific rate to consumers must be “just and reasonable.”<sup>238</sup>

A nearly universal legal obligation imposed by federal and state laws on public utilities is the obligation to furnish service and to charge rates that will avoid undue or unjust discrimination among customers.<sup>239</sup> Further, “‘undue’ or ‘unjust’ discrimination among customers is prohibited.”<sup>240</sup> Policy considerations, such as providing environmental incentives or discounting rates to certain segments of the customer base, must play a subsidiary role in the ultimate rate allocation among customer classes.<sup>241</sup> These principles are embedded in rate decisions of both FERC<sup>242</sup> and state regulatory commissions<sup>243</sup> and in principles used when courts review the application of these principles by regulatory agencies.<sup>244</sup>

“The principles of *horizontal* equity that ‘equals should be treated equally,’ and *vertical equity* that ‘unequals should be treated unequally’ . . . [is interpreted to mean] that equal . . . cost causers for the provision of a good or service should pay the same . . . prices.”<sup>245</sup> Horizontal equity among different customer classes, based on cost of service, is a goal: it is illegal for a state to set rates that “grant any undue preference or advantage to any person or

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236. 16 U.S.C. § 824d(a) (2012).

237. See *Ala. Elec. Coop., Inc. v. FERC*, 684 F.2d 20, 27 (D.C. Cir. 1982) (“[I]t has come to be well established that electrical rates should be based on the costs of providing service to the utility’s customers, plus a just and fair return on equity.”).

238. 16 U.S.C. § 824d(a) (2012).

239. JAMES C. BONBRIGHT, ET AL., *PRINCIPLES OF PUBLIC UTILITY RATES* 515 (2d ed. 1988). If an electric plant is operating near full capacity, higher charges for on-peak versus off-peak would actually be required to avoid discrimination. *Id.* at 528.

240. CHARLES F. PHILLIPS, JR., *THE REGULATION OF PUBLIC UTILITIES: THEORY AND PRACTICE* 434 (3d ed. 1993).

241. BONBRIGHT, *supra* note 239, at 524.

242. *Ala. Elec. Coop., Inc.*, 684 F.2d at 21, 27.

243. Mich. Comp. Laws Serv. § 460.557(3)–(4) (LexisNexis 2010); see also Tex. Util. Code Ann. § 36.003(a)–(c) (West 2007).

244. See *Ala. Elec. Coop., Inc.*, 684 F.2d at 27.

245. BONBRIGHT, *supra* note 239, at 568.

subject any person to any undue prejudice or disadvantage.”<sup>246</sup> An electric power customer only needs to show substantial vertical disparity in rates between customers of the same class in order to raise questions of discriminatory or preferential rates.<sup>247</sup>

Under the Federal Power Act, FERC may only allow “such rates as will prevent consumers from being charged [with] any unnecessary or illegal costs.”<sup>248</sup> The burden is on the applicant utility to justify all rates as just and reasonable.<sup>249</sup> Whenever FERC determines that a public utility’s rates, charges, or service classifications are unjust, unreasonable, or unduly discriminatory, FERC can determine and order rates that are just and reasonable.<sup>250</sup> FERC can further change a rate or rule it finds unreasonable.<sup>251</sup>

The Federal Power Act prohibits terms of service that are unreasonable or unduly preferential as between different classes of customers.<sup>252</sup> At the federal level of regulation, Section 205 of the Federal Power Act prohibits utilities from granting any “undue preference or advantage to any person or . . . maintain[ing] any unreasonable difference in rates . . . either as between localities or as between classes of service.”<sup>253</sup> FERC regulations specify that it is illegal to discriminate in rates between customers of the same class.<sup>254</sup>

Notably, unlawful discrimination may arise under a single rate design where “a uniform rate creates an undue disparity between

246. 16 U.S.C. § 824d(b)(1) (2012).

247. *See* Pub. Serv. Co. Ind. v. FERC, 575 F.2d 1204, 1212 (7th Cir. 1978), *aff’d sub nom.* City of Frankfort, Ind. v. FERC, 678 F.2d 699 (7th Cir. 1982).

248. NAACP v. Fed. Power Comm’n, 425 U.S. 662, 666 (1976).

249. Nantahala Power & Light Co. v. FERC, 727 F.2d 1342, 1347, 1351 (4th Cir. 1984).

250. 16 U.S.C. § 824e(a) (2012). The court directly answered the issue of current “usefulness” and provided further insight into what types of canceled investments can be included in rate bases: “[T]he Commission’s decision to authorize full recovery was just and reasonable and consistent with Commission policy. We are unpersuaded by Norwood’s argument that forcing ratepayers to pay for a plant no longer producing electricity conflicts with the regulatory precept that ratepayers should only pay for items “used and useful” in providing service. Although a utility’s rate base normally consists only of items presently “used and useful” . . . a utility may include “prudent but canceled investments” in its rate base as long as the Commission reasonably balances consumers’ interest in fair rates against investors’ interest in “maintaining financial integrity and access to capital markets.” Town of Norwood v. FERC, 80 F.3d 526, 531 (D.C. Cir. 1996) (citations omitted).

251. 16 U.S.C. § 824e(a) (2012).

252. 16 U.S.C. § 824d(b) (2012).

253. *Id.*

254. Pub. Serv. Co. Ind. v. FERC, 575 F.2d 1204, 1212 (7th Cir. 1978), *aff’d sub nom.* City of Frankfort, Ind. v. FERC, 678 F.2d 699 (7th Cir. 1982); Wis. Mich. Power Co., 54 Pub. Util. Rep. 3d (PUR) 321 (Fed. Power Comm’n 1964) (“Section 205 [of the Power Act] does not prohibit all rate distinctions but only rate discrimination as between customers of same class.”); STEVEN FERREY, *THE NEW RULES: A GUIDE TO ELECTRIC MARKET REGULATION* 26 (2000).

the rates of return on sales to different groups of customers.”<sup>255</sup> If this rate design provides costs of service to one group that are different from costs of service to another, “the two groups are [then], in one important respect, quite dissimilar.”<sup>256</sup> It is also illegal for a public utility to “maintain any unreasonable difference in rates . . . as between localities,” which, again, is a geographically based discrimination.<sup>257</sup> “The provision and pricing of services to any person(s) should not impose unwarranted economic costs on other person(s).”<sup>258</sup>

Regulatory scrutiny is utilized to ensure that only costs passed on to retail rates are “necessary and prudent.”<sup>259</sup> In deciding on utility management prudence in a rate-making proceeding, the regulatory agency must judge whether actions:

[W]ere prudent at the time, under all the circumstances, considering that the company had to operate at each step of the way prospectively rather than in reliance on hindsight . . . [and] in light of all conditions and circumstances which were known or which reasonably should have been known at the time the decisions were made.<sup>260</sup>

The rate charged to one group should not impose a cost burden derived from a different pricing policy of another group.<sup>261</sup> Additionally, a rate structure should avoid undue discrimination in rate relationships, avoid rate structures that encourage wasteful consumption, and include rates that fairly allocate total cost.<sup>262</sup>

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255. *Ala. Elec. Coop., Inc. v. FERC*, 684 F.2d 20, 27 (D.C. Cir. 1982).

256. *Id.* at 27.

257. 16 U.S.C. § 824d(b)(2) (2012).

258. BONBRIGHT, *supra* note 239, at 568.

259. *Midwestern Gas Transmission Co.*, 36 F.P.C. 61, 70 (1966), *aff'd sub nom. Midwestern Gas Transmission Co. v. Fed. Power Comm'n*, 388 F.2d 444 (7th Cir. 1968).

260. *In re Bos. Edison Co.*, 46 P.U.R. 431, 438 (Mass. D.P.U. 1982), *enforced sub nom. Att'y Gen. v. Dep't of Pub. Utils.*, 455 N.E.2d 414 (Mass. 1983).

261. BONBRIGHT, *supra* note 239, at 568.

262. CHARLES F. PHILLIPS, JR., *THE REGULATION OF PUBLIC UTILITIES: THEORY AND PRACTICE* 434 (3d ed. 1993) (quoting BONBRIGHT, *supra* note 239, at 291).

## V. WINNERS AND LOSERS

*“Washington should not be using taxpayer money to pick winners and losers in the energy industry.”*<sup>263</sup>

- Utah Sen. Mike Lee

Some legislators object to using federal tax incentives for certain power generation technologies to the exclusion of other technologies. As now in place, differentiated federal tax incentives and the “push” of state renewable incentives, will promote only certain technologies and exert different impacts in the regions of the country. Winners and losers will result. Federal and state regulatory ‘pushes’ promote renewable energy.

The “pushes” of regulatory incentives are accentuated by the “pulls” of market forces. Figure 13 illustrates that in the last 5 years, natural gas prices have fallen to one-third of their prior value and are now only a modest premium over coal prices per unit of energy value, as shown in Figure 8. This makes natural gas virtually cost-competitive with the traditionally much cheaper cost of coal for power generation. There is the added environmental benefit of gas producing only one-half as much CO<sub>2</sub> as coal, no particulate matter criteria pollutants, no SO<sub>2</sub> criteria pollutant emissions, and the ability to emit less NO<sub>x</sub>. Just on changing economics, there is now a reason for utilities and independent power generators to run less coal generation. Market forces are favoring natural gas and certain renewable power technologies.

Certain areas of the country and their regional utilities will be more impacted by these regulatory incentives, which shift incentives away from coal-fired electric power. Figure 21 shows the amount of coal-fired electric generation in each region of the U.S. (shown in the blue percentage in each of the regional pie charts). The 5 regions which are at least half dependent on current coal generation, among the 10 national regions, are the mountain states of the west, the west north central region and the east north central region of the Midwest, the south Atlantic region, the east south central region.

The location of the significant U.S. coal plants, by size, is shown in Figure 22.<sup>264</sup> Coal-fired generation is dominant in the eastern

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263. Michael Bastasch, *Podesta: Congress Can't Stop Obama on Global Warming*, THE DAILY CALLER (May 5, 2014) <http://dailycaller.com/2014/05/05/podesta-congress-cant-stop-obama-on-global-warming/>.

264. Jill Fitzsimmons & Max Greenberg, *Myths and Facts About Coal*, MEDIA MATTERS FOR AMERICA (Sept. 20, 2012), <http://mediamatters.org/research/2012/09/20/myths-and-facts-about-coal/190041>.

part of the U.S., exclusive of New England, and including certain large coal plants in the Rocky Mountain States utilizing more recently developed Rocky Mountain low-sulfur coal. At the end of 2012, there were 1,308 coal-fired generating units in the United States, totaling 310 GW of capacity. In 2012 alone, 10.2 GW of coal-fired capacity was retired, representing 3.2% of the 2011 total.<sup>265</sup> Units that retired in 2010, 2011, or 2012 were small, with an average size of 97 megawatts ("MW"), and inefficient, with an average tested heat rate of about 10,695 Btu/kWh. In contrast, units scheduled for retirement over the next ten years are larger and more efficient: at 145 MW, the average size is 50% larger than recent retirements, with an average tested heat rate of 10,398 Btu/kWh.<sup>266</sup>

From the "push" provided by recent federal and state regulation, and the "pull" of economic market forces, U.S. global warming emissions will continue to decline. Approximately 62,000 MW of existing coal-fired generating capacity is planned now to be retired through 2016, which is unlikely to be altered whatever the result of pending Supreme Court review of Obama Administration executive orders and regulations affecting coal.<sup>267</sup> The "push" of federal tax policy and state renewable portfolio standards and net metering will shift core U.S. power technology from fossil fuels to renewable energy. The "pull" of market forces, which are making natural gas cost-competitive with coal, and dramatically declining costs of solar generation, change the economics and technology of power. From the "push" provided by recent federal and state regulation, and the "pull" of economic market forces, U.S. global warming emissions will continue to decline. The "push" of federal tax policy and state renewable portfolio standards and net metering will shift core U.S. power technology from fossil fuels to renewable energy. The "pull" of market forces, which are making natural gas cost-competitive with coal, and dramatically declining costs of solar generation, change the economics and technology of power.

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265. U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2014, <http://www.eia.gov/forecasts/aeo/er/index.cfm>; U.S. ENERGY INFO. ADMIN., AEO2014 PROJECTS MORE COAL-FIRED POWER PLANT RETIREMENTS BY 2016 THAN HAVE BEEN SCHEDULED (Mar. 10, 2014) <http://www.eia.gov/todayinenergy/detail.cfm?id=15031>.

266. *Density of Power Plants by Operating Capacity: Continental United States*, SNL ENERGY (July 9, 2014), [http://www.snl.com/Global\\_Financial\\_Analysis\\_Infographics.aspx](http://www.snl.com/Global_Financial_Analysis_Infographics.aspx).

267. Mario Parker, *Supreme Court Review of EPA Regulations Won't Save Coal-Fired Plants*, ICF Reports, ENV'T REP. (BNA) (Jan. 15, 2015).

Figure 21:  
Electric Generation Sources

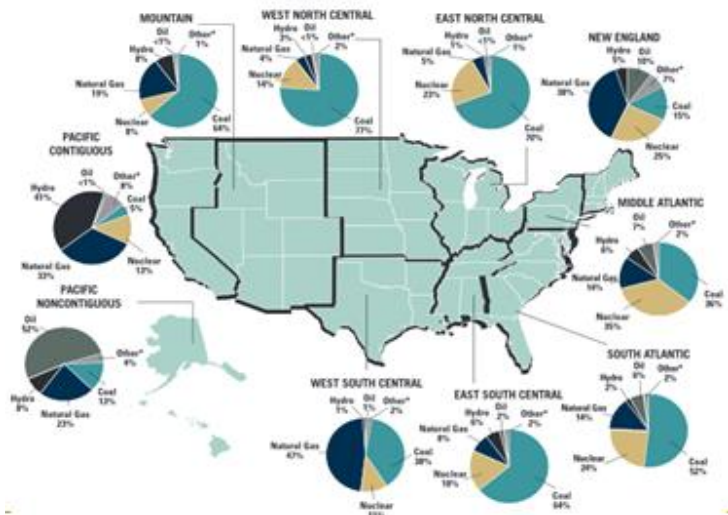


Figure 22:  
Coal Consumption Key Points



There are winners and losers in the selection of incentives for how we change fundamental technology affecting the second most important invention of all time and rescue the climate. Natural gas and renewable energy power generating capacity are beginning to supplant coal generation. The choice of law and regulation will fundamentally determine the effective policy and the future of the Planet.

EMPOWERING STATES TO SET THE PRIORITY  
OF ENVIRONMENTAL CLAIMS  
IN BANKRUPTCY

CASEY WATTERS\*

*The bankruptcy code allows individuals and companies to receive a fresh start through a discharge of debts. When entering into business relationships, creditors are able to factor the risk of the debtor defaulting and discharging the debts. However, unlike debts to specific creditors, the cost of environmental damage is externalized onto all of society. Credit scores are not designed to address environmental impact and creditors are not directly impacted by such externalizations; therefore, the credit structure does not motivate individuals or companies to avoid risk of environmental damage. Because environmental concerns vary from state to state and the bankruptcy code primarily operates by changing outcomes under state law, states should be responsible for setting standards of liability for environmental damage (or risk of damage) under the bankruptcy code.*

*If states are given the opportunity to set the priority at which environmental claims are paid, they could either leave the structure as is and spread the cost to all of society or assign higher priority to claims that have a particular impact on the state’s ecosystem. For example, Florida may set a higher claim priority for the storage of chemicals that have been shown to harm organisms in marshlands, whereas Oklahoma, being relatively free of marshland, may be willing to shoulder a greater degree of risk in the storage of the same chemicals.*

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\* Shanghai Jiao Tong University; Attorney-at-Law, California; Juris Doctor, University of California, Hastings College of the Law. The author dedicates this article to his mom and grandmother who have been supportive throughout his academic endeavors.

## I. INTRODUCTION

The bankruptcy code allows individuals and companies to receive a fresh start through a discharge of debts. When entering into business relationships, creditors are able to factor the risk of the debtor defaulting and discharging the debts. Such assessment is commonly done through the assignment of a credit score.<sup>1</sup> In the United States, scores are assigned predominantly through three companies – Equifax, Experian, and TransUnion.<sup>2</sup> Credit scores operate differently for individuals and businesses, but they are both indicators of the likelihood of the individual or company repaying its debts.

Unlike debts to specific creditors, the cost of environmental damage is externalized onto all of society in the cases of air and water pollution, and it is externalized onto those who did not consent to the risk in cases of fire.<sup>3</sup> Credit scores are not designed to address environmental impact and creditors are not directly impacted by such externalizations; therefore, the credit structure does not motivate individuals or companies to avoid risk of environmental damage. Businesses are also aware that if they take a risk and liability does arise, they can discharge some or all liability in a bankruptcy.<sup>4</sup> Because environmental concerns vary from state to state, and the bankruptcy code primarily operates by changing outcomes under state law, states should be responsible for setting standards of liability for environmental damage (or risk of damage) under the bankruptcy code.

If states are given the opportunity to set the priority at which environmental claims are paid, they could either leave the structure as is, spreading the cost to all of society, or alternatively assign higher priority to claims that have a particular impact on a state's ecosystem. For example, Florida may set a higher claim priority for the storage of chemicals that have been shown to harm organisms in marshlands, whereas Oklahoma, being relatively free of marshland, may be willing to shoulder a greater degree of risk in the storage of the same chemicals.

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1. FICO INC., <http://www.fico.com/en/Company/Pages/about.aspx> (last visited Mar. 3, 2014) (most credit scores are given as FICO scores).

2. *Id.*

3. Laura Petersen, *Global Economy Must Tally Environmental Costs -- Report*, N.Y. TIMES (Oct. 20, 2010), <http://www.nytimes.com/gwire/2010/10/20/20greenwire-global-economy-must-tally-environmental-costs--4664.html>.

4. 11 U.S.C. § 727 (2012) (section authorizing the discharge of debts).



## II. INTRODUCTION TO APPLICABLE BANKRUPTCY LAW

As a constitutionally enumerated power, the federal government has the sole authority to set bankruptcy laws.<sup>5</sup> However, because property law is traditionally set on the state level, the bankruptcy code acts as a mechanism to change rights and obligations that are otherwise a function of state law.<sup>6</sup> There are two general types of bankruptcies: liquidation (Chapter 7) and restructuring (including Chapters 11 and 13).<sup>7</sup> In a Chapter 7 bankruptcy, the assets of the debtor are used to pay a portion of the debts.<sup>8</sup> The remaining debts, subject to certain exceptions, are discharged.<sup>9</sup> The discharge gives the debtor a fresh start without the debt they previously acquired. Under Chapters 11 and 13, the debtor must have a payment plan approved by the court.<sup>10</sup> After making payments for a defined period, the debtor's remaining debt is discharged.<sup>11</sup>

When the debtor filing bankruptcy is an individual, they get to keep certain property called exemptions.<sup>12</sup> States may set their own exemption rules<sup>13</sup> and may deny access to exemptions for specified behavior.<sup>14</sup> Otherwise, the bankruptcy code defines the available exemptions.<sup>15</sup> Property that is not covered as an exemption goes into the bankruptcy estate<sup>16</sup>, which is managed by a trustee and used to pay the debts owed.<sup>17</sup>

When filing bankruptcy, the debtor must list all creditors whom he or she owes.<sup>18</sup> Creditors may then file claims against the

5. U.S. CONST. art. I, § 8.

6. *Butner v. United States*, 440 U.S. 48, 54 (1979).

7. 11 U.S.C. §§ 701-84 (2012) (Ch. 7); 11 U.S.C. §§ 1101-74 (2012) (Ch. 11); 11 U.S.C. §§ 1301-30 (2012) (Ch. 13).

8. 11 U.S.C. § 726 (2012).

9. 11 U.S.C. § 727 (2012).

10. 11 U.S.C. §§ 1121-29 (2012) (addressing the debtor plan for a Ch. 11 filing); 11 U.S.C. §§ 1321-30 (2012) (addressing the plan in a Ch. 13 filing).

11. 11 U.S.C. § 1141(c) (2012) (stating that all property addressed in the plan is "free and clear" of claims); 11 U.S.C. § 1328 (2012) (addressing discharge under a Chapter 13).

12. 11 U.S.C. § 522 (2012).

13. 11 U.S.C. § 522(b)(2) (2012); CAL CODE OF CIV. P. §§ 703-704 (California opted out of the exemption scheme under the federal code and created the two exemption schemes under these sections).

14. *See* *Law v. Siegel*, 134 S. Ct. 1188, 1197 (2014) (stating "the exemption's scope is determined by state law, which may provide that certain types of debtor misconduct warrant denial of the exemption").

15. 11 U.S.C. § 522(d) (2012).

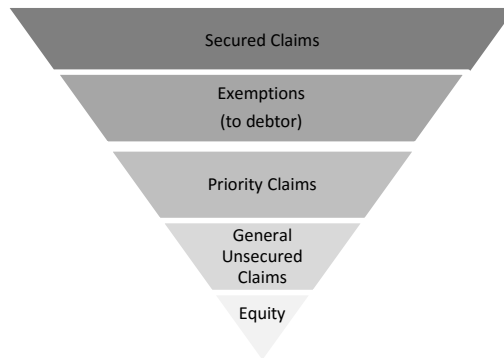
16. 11 U.S.C. § 541 (2012).

17. 11 U.S.C. § 704 (2012).

18. BANKRUPTCY SCHEDULE D: SECURED CLAIMS; SCHEDULE E: UNSECURED PRIORITY CLAIMS; SCHEDULE F: UNSECURED NON PRIORITY CLAIMS (i.e. general unsecured claims),

bankruptcy estate to receive payment for the debt owed.<sup>19</sup> Debts may include not only money but also performance obligations<sup>20</sup> and the risk of future debt due to liability – including environmental liabilities.<sup>21</sup> In the cases of performance obligations and liability, the court can assign a value to the obligation, estimate the future liability, or create a trust to address future claims.<sup>22</sup> This estimate will then be turned into a claim and paid in accordance with the bankruptcy code.<sup>23</sup> Therefore, subject to some statutorily defined exceptions, all remaining debt, obligations, and liability is discharged at the end of the bankruptcy.<sup>24</sup>

Claims are divided into four general categories and are paid in accordance with the category they belong.<sup>25</sup> The “absolute priority” rule states that all claims of a category must be paid in full before any category of a lower priority.<sup>26</sup> The categories from highest to lowest priority are: secured claims, exemptions (not technically a claim category but exemptions are paid to the debtor before lower claims categories), priority claims, general unsecured claims, and equity.




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<http://www.uscourts.gov/FormsAndFees/Forms/BankruptcyForms.aspx> (last visited Jan. 8, 2016).

19. 11 U.S.C. § 501 (2012).

20. BANKRUPTCY SCHEDULE G: EXECUTORY CONTRACTS AND UNPAID LEASES, <http://www.uscourts.gov/forms/individual-debtors/schedule-g-executory-contracts-and-unexpired-leases-individuals> (last visited Jan. 8, 2016).

21. *In Re Piper Aircraft*, 362 F.3d 736, 737 (11th Cir. 2004) (court order creating an irrevocable trust to satisfy all current and future claims).

22. *Id.*

23. 11 U.S.C. § 507(a) (2012) (establishing the order in which claims priority claims are paid. Secured claims are secured by collateral and all other claims for debt are general unsecured claims).

24. 11 U.S.C. § 1141(c) (2012) (stating that all property addressed in the plan is “free and clear” of claims); 11 U.S.C. § 1328 (2012) (addressing discharge under a Chapter 13).

25. 11 U.S.C. § 506 (2012) (secured claims); 11 U.S.C. § 507 (2012) (priority claims).

26. *Northwest Bank Worthington v. Ahlers*, 485 U.S. 197, 197 (1988) (absolute priority rule refers to Chapter 11 but for the purposes of this analysis the same principle applies in Chapter 7 and Chapter 13).

Secured claims are those which are guaranteed by collateral that covers the amount of the claim.<sup>27</sup> Priority claims are set by the bankruptcy code, and the code specifies the order in which these claims are to be paid within the priority category.<sup>28</sup> Administrative priority claims, which include trustee's fees, are paid before most other priority claims.<sup>29</sup> In Chapter 11, administrative priority claims are significant because they must be paid at the beginning of the bankruptcy or it will be dismissed or transferred to Chapter 7 liquidation.<sup>30</sup> The assumption is a business incapable of paying administrative priority claims is not capable of restructuring, and the assets should be liquidated before the company loses more money.<sup>31</sup> Although there are many priority claims<sup>32</sup>, for the purpose of this paper we will refer to all non-administrative priority claims as general priority claims.

Non-monetary obligations are generally also dischargeable in bankruptcy.<sup>33</sup> Contractual obligations to perform or refrain from action can be listed as a claim, and the court may set a monetary value for the claim.<sup>34</sup> The obligation then becomes a general unsecured claim and is discharged at the end of the bankruptcy.<sup>35</sup> However, the Sixth and Seventh Circuits have different approaches to dealing with injunctions.<sup>36</sup> This difference may ultimately be settled by the U.S. Supreme Court setting a standard interpretation of the law nationally. A standard interpretation may allow injunctions to be used as a means of enforcing compliance with environmental regulations – even through the bankruptcy process. This is important because a contractual duty to act, that is meant to prevent environmental

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27. *Secured Claims*, BLACK'S LAW DICTIONARY (6th ed. 1990).

28. 11 U.S.C. § 507(a) (2012).

29. 11 U.S.C. § 507(a)(1)(C) (2012); 11 U.S.C. § 507(a)(2) (2012).

30. John D. Penn, Viewpoint/Daily Bankruptcy Review (Aug. 2005).

31. If a company cannot pay the highest level claims, they will not have money to pay the lower level claims or restructure.

32. See 11 U.S.C. § 507 (2012).

33. See generally Matthew S. Smith, *Breach of Pre-petition Contract Claims May be Subject to "Core" Jurisdiction*, THE NAT'L L. REV. (May 31, 2010), <http://www.natlawreview.com/article/breach-pre-petition-contract-claims-may-be-subject-to-core-jurisdiction> (discussing "core" jurisdiction, demonstrating how breaching a contract can lead to a claim in bankruptcy).

34. *Id.*

35. 11 U.S.C. § 727 (2012).

36. Compare *United States v. Whizco, Inc.*, 841 F.2d 147 (6th Cir. 1988) (holding that an injunction to clean up environmental damage *was* dischargeable), with *United States v. Apex Oil Co.*, 579 F.3d 734 (7th Cir. 2009) (holding that an injunction to clean up a contaminated property was *not* dischargeable).

harm, may now be discharged as an unsecured claim. Additionally, under most circumstances, the bankruptcy estate will not pay anything on the unsecured environmental claim.

### III. ABILITY TO ABANDON PROPERTY UNDER THE CODE

In June of 2009, General Motors Company filed for Chapter 11 bankruptcy.<sup>37</sup> General Motors (GM) had several “toxic assets” that were costing the company, and to deal with this problem GM split itself into two entities.<sup>38</sup> At the time of the split, GM had 127 properties considered “environmentally distressed.”<sup>39</sup> The failed General Motors Corporation changed its name to Motors Liquidation Company (MLC) and took on the toxic assets, while GM started over as General Motors Company.<sup>40</sup> MLC is not a true profit making entity but exists for the purpose of paying claims against GM. MLC does not expect the company to have any value for shareholders after claims are paid.<sup>41</sup> GM was required to allocate funds to MLC to settle claims because the bankruptcy code requires creditors in a Chapter 11 be paid at least what they would have received in a Chapter 7.<sup>42</sup> However, MLC has not been able to maintain the properties abandoned to it.<sup>43</sup> In fact, within two years of GM’s filing, the federal government dedicated over \$800 million to clean abandoned GM sites.<sup>44</sup>

GM abandoned 89 manufacturing facilities across 14 states to MLC.<sup>45</sup> Because the U.S. Attorney General’s Office claims 59 of the properties are contaminated,<sup>46</sup> MLC settled claims against

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37. In Re Motors Liquidation Co., 430 B.R. 65 (Bankr. S.D.N.Y. 2010).

38. *Id.*; MOTORS LIQUIDATION COMPANY: GENERAL UNSECURED CREDITORS TRUST, <https://www.mlcguctrust.com/Page.aspx?Name=Home> (last visited Jan. 8, 2016).

39. PHILIP L. HINERMAN, *Helping Bankruptcy Clients Discharge Their Environmental Responsibilities*, in MANAGING ENVIRONMENTAL LIABILITIES IN BANKRUPTCY 40 (Aspatore ed., 2010).

40. *Id.*

41. *Id.*

42. See 11 U.S.C. § 1325(a)(4) (2012) (best interest test for ch. 13 means creditors will get at least what they would in a ch. 7 liquidation); *Norwest Bank Worthington v. Ahlers*, 485 U.S. 197, 211 (1988) (holding that reorganizations under ch. 12 are not less accessible than under ch. 11).

43. David Shepardson, *Abandoned GM Plants Get Cleanup, Feds Devote \$836M to Recycle Sites*, DETROIT NEWS, May 19, 2010, at A1.

44. *Id.*

45. U.S. ENVTL. PROTECTION AGENCY, CASE SUMMARY: 2010 MLC (GENERAL MOTORS) BANKRUPTCY SETTLEMENT (2010), <http://www.epa.gov/enforcement/case-summary-2010-mlc-general-motors-bankruptcy-settlement>.

46. Tiffany Kary, *GM Estate Seeks Approval of Environmental Agreement*, BLOOMBERG (Oct. 20, 2010), [www.bloomberg.com/news/2010-10-20/gm-s-bankruptcy-estate-seeks-approval-of-773-million-environmental-accord.html](http://www.bloomberg.com/news/2010-10-20/gm-s-bankruptcy-estate-seeks-approval-of-773-million-environmental-accord.html).

the 89 properties filed under the Comprehensive Environmental Response, Compensation and Liability Act<sup>47</sup> (CERCLA), the Resource Conservation and Recovery Act (RCRA)<sup>48</sup>, and The Clean Air Act<sup>49</sup> (CCA).<sup>50</sup> The \$773 million settlement created the largest environmental trust in US history.<sup>51</sup>

The ability to strip liability to another entity is a powerful tool for businesses to effectively abandon property that otherwise no one would take. The abandonment plays an important role in helping debtors to restructure but, as with GM, can be at odds with environmental concerns.

#### IV. FUTURE CONSIDERATIONS FOR THE BANKRUPTCY CODE

The old standard in the Sixth Circuit is *United States v. Whizco, Inc. (Whizco)*.<sup>52</sup> In *Whizco*, the United States brought an action to force *Whizco* to reclaim an abandoned coal mine.<sup>53</sup> Under federal statute and permit regulations, companies were required to reclaim surface area disrupted through mining.<sup>54</sup> *Whizco* abandoned the property and filed for Chapter 11, but the bankruptcy was converted to a Chapter 7.<sup>55</sup> To determine if the obligation was discharged in bankruptcy, the court looked to the definition of claim under 11 U.S.C. § 727(b) as a “right to payment, whether or not such right is reduced to judgment, liquidated, unliquidated, fixed, contingent, matured, unmatured, disputed, undisputed, legal, equitable, secured or unsecured; or a right to an equitable remedy for breach of performance if such breach gives rise to a right of payment. . .”.<sup>56</sup> The defendant in the case, Lueking, was the vice president and sole shareholder of *Whizco*.<sup>57</sup> He testified that he was 63 and surrendered his equipment and mining property in the bankruptcy, factors making performance

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47. 42 U.S.C. § 9601 (2012).

48. *Id.*

49. 42 U.S.C. § 7671 (2012).

50. CASE SUMMARY: 2010 MLC, *supra* note 45.

51. WHITE HOUSE OFFICE OF THE PRESS SECRETARY, FACT SHEET: ENVIRONMENTAL LIABILITIES SETTLEMENT WITH GM, (Oct. 20, 2010), <https://www.whitehouse.gov/the-press-office/2010/10/20/fact-sheet-environmental-liabilities-settlement-with-gm>; U.S. ENVTL. PROTECTION AGENCY, CASE SUMMARY: 2010 MLC, *supra* note 45.

52. *Whizco*, 841 F.2d at 147.

53. *Id.*

54. *Id.* at 148.

55. *Whizco*, 841 F.2d at 148.

56. *Id.* at 148-49; 11 U.S.C. §101(4) (2012) (emphasis added).

57. *Whizco*, 841 F.2d at 147-48.

difficult.<sup>58</sup> The court found that Lueking was not capable of meeting his obligation without spending money because he could not personally conduct the required rehabilitation of the land and did not own title or hold lease to the land.<sup>59</sup> As a result, the court held that the obligation was a valid claim to the extent that it would cost him to comply and was discharged, but that if he could comply with any part of the injunction without incurring monetary costs, the non-monetary portion of the obligation is non-dischargeable.<sup>60</sup>

This case sets the precedent in the Sixth Circuit that injunctions for environmental obligations are not necessarily dischargeable but no requirement can be made to expend funds. Thus, if funds were already set aside through other statutory means prior to bankruptcy, an injunction may be able to force the debtor to use those funds and administer the clean up themselves—provided they are capable. Such a fund base would need to be separate from the estate because there is rarely enough in the estate to cover claims.<sup>61</sup> However, an insurance policy or other asset statutorily secured to cover claims as a requirement of licensing environmentally hazardous activities may suffice. At present, states are waiting for the Supreme Court to weigh in on the issue because any varying interpretation of the court may drastically alter the effectiveness of a statute relying on the precedent of *Whizco*.

A more recent decision from the Seventh Circuit is *U.S. v. Apex Oil Company (Apex)*.<sup>62</sup> Prior to this case, bankruptcy attorneys would tell clients they could “sanitize” property by receiving a discharge of environmental liability from the bankruptcy court, but this case brought less certainty.<sup>63</sup> In *Apex*, the Seventh Circuit held that an injunction not falling within the definition of a claim under the bankruptcy code could not be discharged in a Chapter 11, even if there is a monetary cost attached to complying with the injunction.<sup>64</sup>

In *Apex*, the debtor and new property owner were required by RCRA<sup>65</sup> to clean a site where millions of gallons of oil were contaminating ground water and releasing fumes.<sup>66</sup> As in *Whizco*, the debtor (and in this case the successor to the property) was not

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58. *Whizco*, 841 F.2d at 149.

59. *Id.* at 150.

60. *Id.* at 150-51.

61. MARK JICKLING, CONG. RES. SERV., RS22058, BANKRUPTCY REFORM: THE MEANS TEST, (2005).

62. *Apex*, 579 F.3d at 734.

63. HINERMAN, *supra* note 39, at 41.

64. *Apex*, 579 F.3d at 738.

65. 42 U.S.C. §§ 6901, 6973 (2012).

66. *Apex*, 579 F.3d at 735.

capable of correcting the environmental issue on its own without incurring expenses. The court reasoned that because RCRA did not allow for monetary relief in place of the injunction, the claim was not an equitable remedy that gives rise to a right of payment under the bankruptcy code.<sup>67</sup>

The implication of this interpretation is states could create causes of action in equity without allowing monetary damages for environmental harm and prevent the discharge in bankruptcy. A significant drawback is more businesses would be incapable of restructuring and forced into Chapter 7 if they had to carry the entire debt. Additionally, if a business is liquidated, it is incapable of making additional profits to pay a greater percentage of claims, including environmental claims. This is in addition to the costs to society from loss of employment and lost tax revenue. Also, if the liability passes to subsequent owners, potential owners who would invest in some correction of the harm will not take the land for fear of adopting full liability. As a result, the law will prevent restoration that would otherwise take place.

*Whizco* and *Apex* are not controlling law outside their circuits, and the Supreme Court declined to hear the appeal of *Apex*, making the adoption of one of these standards on the national level unlikely in the near future. The adoption of either interpretation of the code will not directly alter any of the proposals to empower states in processing or regulating environmental concerns in bankruptcy assessed in the proceeding pages. However, the Court's decision would be important in allowing states to proactively decide if environmental causes of action on the state level should be in law, equity, or equity with a monetary alternative. It would also be important for policy makers in understanding possible legal and policy implications of those choices.

#### *A. Solution Through the Existing Code: Setting of Exemptions*

Under the existing code, states may opt out of the federal exemption scheme and set their own exemptions. California already has two exemption schemes.<sup>68</sup> The dual structure allows debtors to choose between using home equity as their primary exemption or using cash reserves.<sup>69</sup> A state could set a second (third in the case of

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67. *Id.* at 736.

68. CAL. CIV. PROC. CODE § 703 (2012) (allowing less of an exemption for home equity compared to §704, but allowing a greater exemption for other assets); CAL. CIV. PROC. CODE § 704 (2015) (allowing a greater exemption for equity in a home).

69. CAL. CIV. PROC. CODE §§ 703-04 (2012).

California) exemption scheme that is for those who seek a discharge for environmental damage or release from liability for potential damage. By lowering the individual exemption limit, the scheme would create a greater cost for actions harming the environment and could dissuade individuals from harmful actions they might otherwise take. For example, if a farmer decided to install a small gas tank on his property for his equipment, he might purchase an old cheap tank, knowing that any cleanup liability from a leaky tank could be discharged in bankruptcy. If the exemption scheme would require him to forfeit an additional \$20,000 in assets, that same individual might be motivated to purchase a safer tank. However, there are two significant problems with this approach.

The first problem is exemptions are only applicable for individuals,<sup>70</sup> so the scheme would not deter businesses other than sole proprietorships.<sup>71</sup> Businesses provide larger scale environmental risks than most individuals. Therefore, such a solution will have limited effect.

The second problem is the individual would have to be aware of the bankruptcy process, know such an exemption scheme existed, and factor the risks of bankruptcy into his or her decision. The fact individuals rarely diversify the locations of their funds in bank accounts between multiple banks demonstrates people do not generally prepare for the periods of financial hardship warranting bankruptcy.<sup>72</sup> Similarly, sole proprietorships generally have less access to expertise than other types of businesses.<sup>73</sup> Therefore, sole proprietorships will not likely be more informed than the average person about the disincentives to creating environmental harm.

An additional exemption scheme will lead to a larger payout in some environmental claims, because more assets will be included in the bankruptcy estate in cases with environmental liability. However, most cases are zero-asset cases, where the debtor's assets are less than their exemptions and no money is paid to creditors.<sup>74</sup> Lowering the exemption amount will decrease the number of zero-asset cases, but lowering the exemption too far will negate the bankruptcy code's goal of allowing debtors enough assets to start over.

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70. *Id.*

71. JOHN E. MOYE, *THE LAW OF BUSINESS ORGANIZATIONS* 14 (6th ed. 2005).

72. See Jacob McElwee, *Don't Sell Property to Avoid Bankruptcy*, NAT'L BANKR. F. (Mar. 8, 2014), <http://www.natlbankruptcy.com/dont-sell-your-birthright-for-a-bowl-of-soup/>; The use of multiple banks decreases the debtor's risk of losing all cash assets if a bank freezes the debtor's accounts to use the funds to offset a debt.

73. See Susan Coleman, *Sources of Capital for Small Family-Owned Businesses* 12 FAM. BUS. REV. 73 (1999) (sole proprietorships are limited in funding, so it is harder for them to hire experts and experienced employees).

74. JICKLING, *supra* note 61, at 1



Although this solution is limited, it can be accomplished on the state level. However, there are more comprehensive solutions that require congressional amendment of the code.

*B. Solutions Requiring Amendment  
of the Existing Code*

The success of the American economy has been widely attributed to policies fostering risk-taking and entrepreneurial spirit.<sup>75</sup> The bankruptcy code, in allowing businesses to restructure and discharge debts, encourages a degree of risk-taking.<sup>76</sup> Because the absolute priority rule requires higher-level claims to be paid in full before lower-level claims, setting environmental claims as administrative-level<sup>77</sup> or priority claims increases the risks to creditors who would have lower-level claims, resulting in a positive and a negative consequence.

The positive consequence to increasing the priority of environmental claims is that creditors will be less likely to do business with companies incurring environmental liabilities, or they will charge higher credit rates to compensate for the increased risk. The additional costs will cut into profit margins and motivate businesses to avoid environmental liabilities. The negative consequence is businesses finding themselves with an unforeseeable or unavoidable environmental liability may be harmed by the higher rates creditors will charge to the extent they will need to file a bankruptcy they could otherwise avoid. This not only harms the business directly (and thereby the local economy), but the business may also have been able to correct the environmental damage if they were able to continue operating without the bankruptcy. A balance must be struck between the needs to protect the environment and the goal of allowing companies to take reasonable risks.

Setting environmental liabilities at the equivalent level as administrative claims would meet the environmental goals at the expense of business goals. Environmentally, it would be ideal

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75. See, e.g., Maryann P. Feldman, *The Entrepreneurial Event Revisited: Firm Formation in a Regional Context*, 10 INDUS. & CORP. CHANGE 861 (2001), [http://maryannfeldman.web.unc.edu/files/2011/11/Entrepreneurial-Event-Revisited\\_2001.pdf](http://maryannfeldman.web.unc.edu/files/2011/11/Entrepreneurial-Event-Revisited_2001.pdf).

76. Nathalie Martin, *U.S. Bankruptcy Laws Encourage Risk-Taking and Entrepreneurship*, 11 EJOURNAL USA: ECON. PERSP. 13 (2006), <http://photos.state.gov/libraries/amgov/30145/publications-english/EJ-entrepreneurship-0106.pdf>.

77. The claim would not be administrative in the sense that it is for administration of the estate, but it would be set at a higher level than priority claims. True administrative claims would need to be paid in full prior to environmental claims or the trustee would lack the funds necessary to administer the estate.

because businesses cannot receive approval on a restructuring plan unless they are able to pay all administrative costs up front. The idea is businesses that cannot pay the administrative claims are not likely to succeed in restructuring and should be liquidated to ensure the maximum pay out on claims. Knowing an environmental liability a business could not pay would block a business's ability to restructure under a Chapter 11 would be significant incentive not to take on such a risk.<sup>78</sup> Creditors will also demand businesses abstain from such risks because they would not be paid until the environmental claim is paid in full. The fact the claim will be paid in full before regular business debts is the best attribute of this plan. Creditors have the opportunity to assess risks and enter into agreements with the knowledge of those risks. The man who lives downhill from the farmer who installed the gas tank did not have the same opportunity, so his claim (or that of society in the case of air or water pollution) should be paid before creditors voluntarily taking risks. This is a value judgment upon which the analysis is based. It must also be recognized that this judgment is not embodied in the current code. For example, a secured creditor holding a claim from a loan agreement may have priority over the judgment lien of a victim of some tort claims.<sup>79</sup>

As demonstrated in the policies underlying a Chapter 11, businesses in operation may be able to pay a larger share of claims than those liquidated.<sup>80</sup> Setting environmental claims as administrative without other changes to the code is not ideal. However, setting claims as priority will increase the pressure on businesses from those who would be general unsecured creditors and will likely not receive anything in a bankruptcy. This will also ensure a larger portion of environmental claims will be paid than if the debt fell in the general unsecured category. This approach will be beneficial for business, but it may not be strong enough to effectively dissuade harmful activity.

In order to effectively target regional environmental concerns, the bankruptcy code should be amended to empower states to statutorily enumerate environmental claims at the level of administrative claims, while additionally allowing these claims to be exempt from the rule requiring all administrative claims to be paid prior to Chapter 11 reorganization. This will cause creditors to pressure businesses not to take unnecessary environmental risks, while allowing businesses to continue operating if doing so will lead

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78. 11 U.S.C. § 507 (2012).

79. *Id.*

80. See Raymond T. Nimmer & Richard B. Feinberg, *Chapter 11 Business Governance: Fiduciary Duties, Business Judgment, Trustees and Exclusivity*, 6 BANKR. DEV. J. 1 (1989) (discussing business discretion and loss allocation).

to greater payment on claims. This would also allow states to tailor the applicable environmental liabilities to the state's concerns and business interests. Individual state legislatures can also address changing business and environmental concerns more quickly than the 535-member U.S. Congress is capable. Should the provision have a more substantial effect on business than is desired (which is negative in terms of government income and employment), states may reduce the number of environmental liabilities at the level of administrative claims or choose not to avail themselves of the opportunity.

## V. CONCLUSION

In certain contexts, the interests of the bankruptcy code and of environmental protection are opposed. The bankruptcy code seeks to give debtors a fresh start by wiping away their debts and leaving them with enough assets to succeed. When a debt is created by harm to the environment or a condition that threatens harm to the environment, the discharge of the debt has negative environmental consequences. To ensure that the environment and debtors are both protected a balance between the two interests must be struck.

Although the bankruptcy code primarily works by changing outcomes under pre-existing state law, the code itself is entirely federal. However, the code grants states the ability to set their own exemptions, and nothing prevents Congress from allowing states to set certain claims at a higher status. Allowing states the power to increase the priority of specific claims allows states to prioritize based on which environmental risk factors are of greatest concern and the ability to act and notify businesses of what types of liabilities to avoid. The exemption schedule could be used under the current code to accomplish the same goal with individuals, but, other than sole-proprietorships, companies would not be affected. Also, individuals are less likely to be informed about the law, and such a scheme may have little effect in regards to incentives not to cause environmental harm – even if it does increase the amount of claims paid.

Allowing states to set environmental claims at the level of administrative claims should cause creditors of general unsecured claims to be wary of entering into a creditor-debtor relationship and may also motivate companies to avoid environmental liability. However, it is important environmental claims not be subject to the rule under Chapter 11, that all administrative claims be paid before a plan can be confirmed. Otherwise, businesses able to

restructure and potentially pay the entire claim will be forced into liquidation – ultimately hurting the business and the ability to repair environmental damage. Allowing states to set claims as administrative level claims would meet the objectives of allowing a fresh start for debtors and decrease environmental damage through pressure from general unsecured creditors, while ensuring a higher percentage of environmental claims will be paid.

# SELLING FLORIDA’S WATER UP THE RIVER

KAREN CONSALO\*

*“All the water that will ever be is, right now.”<sup>1</sup>*

~

*“When the well is dry, we know the worth of water.”<sup>2</sup>*

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The State of Florida is blessed with ecological diversity like no other place on the planet. Within its borders are over 700 natural springs, at least thirty of which are first magnitude springs.<sup>3</sup> In addition to these springs, Florida is home to 18 natural ecosystems, 7,800 lakes, and 82 different plant communities, all of which results in more biological diversity than any other state in America.<sup>4</sup>

While Florida has the second highest rainfall in the United States, from the northern Okefenokee Swamp to the southern

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\* Karen Consalo, Esq., has practiced land use law in Central Florida for the last decade. She graduated *Magna Cum Laude* from Rollins College in 1997 and *with honors* from the University of Florida College of Law in 2000. Mrs. Consalo was awarded a Certificate in Land Use and Environmental Law from UF College of Law. In 2010, the Florida Bar recognized Mrs. Consalo's knowledge and expertise in government legal matters and certified her as an expert in City, County & Local Government law. In recent years, both Rollins College and Barry University College of Law have invited Mrs. Consalo to teach land use, environmental, and constitutional law courses to their respective planning and law students.

1. NAT’L GEOGRAPHIC (Oct. 1993).

2. BENJAMIN FRANKLIN, POOR RICHARD’S ALMANACK (1746).

3. WALTER SCHMIDT, ET AL., SPRINGS OF FLORIDA, BULLETIN NO. 66, 29 (Fla. Dep’t of Env’tl. Prot. ed. 2004).

4. Kariena Veaudry, *State and Regional Prospectives: Water Quality & Conservation in Florida*, EARTHJURIS, <http://earthjuris.org/wp-content/uploads/2011/05/FloridaNativePlant.pdf>. (last visited Feb. 7, 2016).

Florida Everglades, these bountiful ecosystems are still dependent to a great degree on the level and flow of underground water supplies.<sup>5</sup> Yet these life sustaining water bodies are under threat by the very government agency tasked to protect them. By selling millions upon millions of gallons of water from the Floridan aquifer to out-of-state bottling interests, Florida's water management districts are causing an unnecessary, yet life threatening, depletion of the aquifer waters. Over the last forty years of regulation by the water management districts, many of our springs have declined in quality and flow while others have dried up altogether.<sup>6</sup>

In Central Florida, the St. Johns River Water Management District issues numerous Consumptive Use Permits, or CUPs, to public and private development interests. Often selling millions of gallons each year for nothing more than a few hundred dollars in permitting fees.<sup>7</sup> In recent years, the St. Johns River Water Management District has issued hundreds of millions of gallons in CUPs despite outcry from both local governments and local citizens. This article reviews two of the most controversial of these permits.

## I. FLORIDA'S PUBLIC TRUST FOR WATER RESOURCES

Since 1845, the "navigable water bodies" within the State of Florida, including rivers, lakes and tidelands, have been held in trust for the benefit of the citizens of this State.<sup>8</sup> This protected status is referred to as the Public Trust Doctrine.<sup>9</sup> This Doctrine imposes a legal duty upon State officials to preserve and control such waters for public navigation, fishing, swimming, and other lawful uses.<sup>10</sup> The Florida Constitution incorporates the Public Trust Doctrine and expressly limits private use of lands under navigable waters to such uses which are not contrary to the public interest.<sup>11</sup>

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5. See Chandra S. Pathak, *Frequency Analysis of Daily Rainfall Maxima for Central and South Florida*, SFWMD TECHNICAL PUBL'N EMA #390 (Jan. 2001), [http://www.sfwmd.gov/portal/page/portal/pg\\_grp\\_tech\\_pubs/portlet\\_tech\\_pubs/ema-390.pdf](http://www.sfwmd.gov/portal/page/portal/pg_grp_tech_pubs/portlet_tech_pubs/ema-390.pdf). In recent decades, rainfall has averaged fifty-four inches per year with a peak of fifty-seven inches per year in the 1980s. WETLAND SOLUTIONS, INC., RAINBOW SPRINGS: RESTORATION ACT PLAN, 14 (Howard T. Odum Fla. Springs Inst., ed. 2013).

6. FLA. DEP'T OF ENVTL. PROT., FLORIDA SPRINGS INITIATIVE PROGRAM SUMMARY AND RECOMMENDATIONS 4 (2007), <http://www.dep.state.fl.us/springs/reports/files/FSIreport2007FINAL.PDF>.

7. Ivan Penn, *The Profits on Water Are Huge, but the Raw Material Is Free*, TAMPA BAY TIMES, Mar. 15, 2008.

8. Monica K. Reimer, *The Public Trust Doctrine: Historical Protection for Florida's Navigable Rivers and Lakes*, 75 FLA. B.J. 4, 10 (Apr. 2001).

9. *Id.*

10. *Id.*

11. FLA. CONST. art. X, § 11.

## II. THE UNIQUE GEOLOGY AND HISTORY OF FLORIDA AS IT RELATES TO POTABLE WATER SUPPLY

Tens of millions of years ago, most of the state of Florida was submerged deep under ocean waters.<sup>12</sup> During that time, the bones of countless prehistoric sea creatures sank to the ocean floor.<sup>13</sup> Through the eons, these fossils formed a thick layer of limestone.<sup>14</sup> When the seabed eventually receded, this limestone became exposed to air and rain.<sup>15</sup> Future rains, with a slightly acidic quality caused by plant decay, pierced holes in the limestone.<sup>16</sup> These holes in the limestone grew larger and crevasses formed, eventually creating a labyrinth of chambers and interconnections which filled with fresh rainwater as well as brackish seawater.<sup>17</sup> These massive underground storage chambers, which store 60% of Florida's freshwater, are collectively referred to as the Floridan Aquifer.<sup>18</sup> In 2000, the human demand for potable water was an estimated 6.7 billion gallons per day.<sup>19</sup> This is estimated to increase by about 30% to 8.7 billion gallons per day by 2025.<sup>20</sup>

Despite the impact on our highly water dependent ecosystems, the State of Florida has one of the highest water withdrawal rates east of the Mississippi River.<sup>21</sup> The vast majority of this water is drawn from either the Floridan Aquifer or from surface water sources such as lakes and rivers.<sup>22</sup> Many argue that rather than continuing to withdraw more and more from our public waters, better conservation and technological techniques could dramatically curb the need to continually access more water resources. Support for this argument may be found in a recent report, which demonstrated that while Florida's population is expected to grow by 57% over the next ten years, additional potable water demands will

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12. *Sinkholes: Florida Grapples with the Wonders of the Not-So-Deep*, EARTH MAG. (Aug. 2010), <http://www.earthmagazine.org/article/sinkholes-florida-grapples-wonders-not-so-deep>.

13. *Id.*

14. *Id.*

15. *Id.*

16. *Id.*

17. *Id.*

18. Marguerite Koch-Rose, et al., *Florida Water Management and Adaptation in the Face of Climate Change: A White Paper on Climate Change and Florida's Water Resources*, STATE UNIV. SYS. OF FLA. 5 (Nov. 2011), [http://floridacclimate.org/docs/water\\_managment.pdf](http://floridacclimate.org/docs/water_managment.pdf).

19. FLA. DEPT OF ENVTL. PROT., ANNUAL REPORT ON REGIONAL WATER SUPPLY PLANNING (2010).

20. *Id.*

21. Sidney F. Ansbacher, Robert D. Fingar, & Adam G. Schwartz, *Strictly Speaking, Does F.S. 376.313(3) Create Duty to Everybody, Everywhere? Part I*, 84 FLA. B.J. 36 (2002).

22. Koch-Rose, *supra* note 18, at 5.

only increase by 30%.<sup>23</sup> Yet enhanced conservation and advanced technological efforts will be of little avail if the water management districts continue to grant CUPs to private commercial interests for corporate profit, and to the governments which pay little heed to conservation and will not do so unless required to do so.<sup>24</sup>

### III. FLORIDA WATER RESOURCES ACT AND THE WATER MANAGEMENT DISTRICTS

Until the 1970's, Florida's water withdrawal and allocation laws were founded upon common law concepts of riparian rights.<sup>25</sup> This legal framework allowed any property owner adjacent to a water body, known as a "riparian owner," to freely withdraw and utilize the water so long as that use did not unreasonably interfere with other riparian owners.<sup>26</sup>

On the heels of a severe drought that struck Florida in 1970, however, University of Florida Professor Frank Maloney led a group of colleagues in the preparation of the Model Water Code.<sup>27</sup> It was Professor Maloney's intent to present a ready-made regulatory scheme to preserve water resources for future human consumption.<sup>28</sup> He developed the innovative, yet quite obvious, concept of drawing jurisdictional boundaries for water regulation based upon hydrologic boundaries of various surface basins, rather than upon existing political boundaries.<sup>29</sup>

The 1972 Florida Legislature adopted the Model Water Code, largely as Professor Maloney designed it. The new law became known as the Florida Water Resources Act of 1972 and was set forth in chapter 373, Florida Statutes.<sup>30</sup> Originally including only four water management districts, the law currently provides for five regulatory areas encompassing Florida's main water basins: Northwest Florida, Suwannee River, St. Johns River, South Florida, and Southwest Florida Water Management Districts.<sup>31</sup> Each Water Management District (WMD) is managed by a board of nine members, except for the South Florida WMD which has thirteen

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23. Koch-Rose, *supra* note 18, at 5.

24. *Id.*

25. Andrew J. Baumann, *General Overview of Riparian Rights in Florida*, <http://www.llw-law.com/files/presentations/General%20Overview%20of%20Riparian%20Rights%20in%20Florida.pdf> (last visited on Feb. 7, 2016).

26. *Id.*

27. FRANK E. MALONEY, RICHARD C. AUSNESS, & JOE SCOTT MORRIS, *A MODEL WATER CODE, WITH COMMENTARY* (1972).

28. *Id.* at preface.

29. *Id.* at 9.

30. FLA. STAT. § 373.013 (2014).

31. FLA. STAT. § 373.069 (2014).



members.<sup>32</sup> These members are appointed by the Governor with approval confirmed by the Florida Senate. Each member has a term of four years.<sup>33</sup>

WMDs function as dependent units of local government, crossing the political jurisdictional boundaries of cities, counties, and other regional planning districts.<sup>34</sup> Each district is delegated with broad authority to engage in independent decision making and policy setting.<sup>35</sup> While technically supervised by the Florida Department of Environmental Protection (FDEP), day-to-day decisions, particularly with regard to permitting, remains with the WMDs.<sup>36</sup>

The purpose of a water management district is to plan for water supply and restoration of Florida's water bodies including surface and ground waters.<sup>37</sup> To accomplish these goals, the districts are vested with far reaching authority over almost all waters of the State including: regulatory authority over wetland conversions, surface water management facilities, and well construction; authorization to construct and operate water management structures such as dikes, levees and pumps; planning for future water supply; and land acquisition and management.<sup>38</sup> In a demonstration of public support for the goal of protecting water resources, Florida's voters passed a constitutional amendment in 1976 to grant each WMD the power to levy ad valorem taxes of up to 1 mills.<sup>39</sup>

Of the many tasks delegated to the water management districts, the most controversial action tends to be the districts' allowance of the large water withdrawals from public waters, known as Consumptive Use Permits, for private and government interests. It is the overly generous, even frivolous, issuance of these permits by the St. Johns River Water Management District (WMD) with which this article is concerned.<sup>40</sup>

At its heart, a Consumptive Use Permit (CUP) is a government sanctioned withdrawal of billions of gallons of water from the State's water supply.<sup>41</sup> Yet, as demonstrated further in this article, withdrawal of waters, especially in large amounts, is almost always

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32. FLA. STAT. § 373.073(1)(a) (2014).

33. FLA. STAT. § 373.073(1)(b) (2014).

34. FLA. STAT. §§ 373.026, .046, .047 (2014).

35. *Id.*

36. FLA. STAT. §§ 373.016(5), .026, .069 (2014).

37. FLA. STAT. §§ 373.016(22), .016, .083 (2014).

38. *Id.*

39. FLA. STAT. ch. 373 (2014).

40. In addition to the cases discussed in this article, many other consumptive use battles have been fought in Florida. See Kelly Samek, *Unknown Quantity: The Bottled Water Industry and Florida's Springs*, 19 J. LAND USE & ENVT'L. L. 569 (2004); Press Release, Food & Water Watch, Florida Fights Back Against Bottled Water Extraction (Oct. 2, 2008).

41. FLA. STAT. § 373.216 (2014).

deleterious to the health, purity, and functionality of a water body. Indisputably though, citizens and agricultural interests of Florida require clean fresh water for survival. The natural cycle of bountiful summer rainfalls interrupted by several winter months of draught is insufficient to meet the current needs of Florida's vast population: economic and physical development, production of food products, and maintenance of a high quality of life defined by manicured lawns, ample potable water for showers and pools, and even water park amusements. Chapter 373 is drafted such that water management districts are tasked to carefully balance and limit the inherent harm to public water bodies by massive water withdrawals with the public's need for clean potable water.<sup>42</sup>

In Professor Maloney's Model Water Code, he envisioned a balancing of the immediate human demands for water for sustenance, hygiene, and recreation, against the hydrologic needs of our varied ecosystems for the historic water flows and levels upon which these ecosystems formed.<sup>43</sup> The long term goal of the Model Water Code was to ensure that future Floridians and long standing ecosystems would have an ample supply of clean water.<sup>44</sup> Since current law allows a consumptive use permit to vest its holder with the right to withdraw significant amounts of water for up to twenty years, even fifty years in certain circumstances, it is important that this balancing act be carefully evaluated during review of every CUP permit.<sup>45</sup>

The Floridan Aquifer supplies water at several levels.<sup>46</sup> The ground level, referred to as the Surficial Aquifer, reaches from the surface to about fifty feet below ground level.<sup>47</sup> From 50 feet to 150 below ground level is the Intermediate Confining Unit.<sup>48</sup> Immediately below this, from about 150 feet to 550 feet, is the Upper Floridan Aquifer.<sup>49</sup> Below this is the Middle Semi-Confining Unit, which extends approximately another 450 feet.<sup>50</sup> Finally, below this level, is the Lower Floridan Aquifer extending to sea level.<sup>51</sup> Most of the water used for drinking, irrigation, and other human needs is drawn from the Upper Florida Aquifer.<sup>52</sup> Florida is

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42. FLA. STAT. § 373.223 (2014); FLA. STAT. § 373.227 (2014).

43. Maloney, *supra* note 27.

44. *Id.*

45. *Id.*

46. Sandra M. Eberts, et al., *Assessing the Vulnerability of Public-Supply Wells to Contamination: Floridan Aquifer System Near Tampa, Florida* (U.S. Geological Survey ed. 2009), <http://pubs.usgs.gov/fs/2009/3062/pdf/fs20093062.pdf>.

47. *Id.*

48. *Id.*

49. *Id.*

50. *Id.*

51. *Id.*

52. Eberts, *supra* note 46.

one of the most highly populated states in America and home to approximately 20 million residents.<sup>53</sup> This population is expected to increase to approximately 25 million by 2015.<sup>54</sup>

#### IV. THE SCIENCE OF WATER QUALITY

Water resource preservation and associated laws are highly dependent on accurate scientific data, such as analysis of historic high and low water levels, speed of water flow, catalogue of riparian and literal habitat and species, and the amounts and types of pollutants in a particular water body. Data collected from the hundreds of water bodies across the State is so voluminous that it must be distilled and summarized in order to draft appropriate statutes, codes, and policies.

The most common distillation of data relied upon by regulatory agencies is known as the “Total Maximum Daily Load” or TMDL.<sup>55</sup> TMDL is a numerical evaluation of the total amount of a particular pollutant which a particular water body can receive over a certain period of time and still maintain its quality.<sup>56</sup> TMDLs must be established by the FDEP for any surface water body in Florida with low water quality standards.<sup>57</sup> Once established, the TMDL allows for objective analysis as to whether a requested water withdrawal through a Consumptive Use Permit would be overly harmful to the quality and viability of the water body.<sup>58</sup>

Another common distillation of the water quality science is referred to as “minimum flows and levels” or MFL.<sup>59</sup> As the term implies, this is a two-part analysis of the impact of necessary minimum water flow and water level of a particular water body to ensure its health and viability.<sup>60</sup> The minimum flow is the “limit at which further withdrawals would be significantly harmful to the water resource or ecology of the area.”<sup>61</sup> The minimum level is the level at which “further withdrawals would be significantly harmful to the water resources of the area.”<sup>62</sup> Different water bodies have different needs so far as rate of flow and water quantity for

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53. Noted as 19,074,434 by the St. Johns River Water Management District. ST. JOHNS RIVER WATER MGT. DIST., 2012 SURVEY OF ESTIMATED ANNUAL WATER USE FOR ST. JOHNS RIVER WATER MANAGEMENT DISTRICT: TECHNICAL FACT SHEET SJ2013-FSI (2013).

54. Koch-Rose, *supra* note 18.

55. U.S. ENVTL. PROT. AGENCY, WHAT IS A TMDL?, [http://water.epa.gov/lawsregs/laws\\_guidance/cwa/tmdl/overviewoftmdl.cfm](http://water.epa.gov/lawsregs/laws_guidance/cwa/tmdl/overviewoftmdl.cfm) (last visited on Feb. 7, 2016).

56. *Id.*

57. *Id.*

58. *Id.*

59. FLA. STAT. § 373.042 (2014).

60. FLA. STAT. §§ 373.042-.0421 (2014).

61. FLA. STAT. § 373.042(1)(a) (2014).

62. FLA. STAT. § 373.042(1)(b) (2014).

continued viability.<sup>63</sup> By analyzing MFL for each water body, an objective determination is made as to whether a Consumptive Use Permit would reduce the surface level to a point significantly harmful to the functionality of the water body and the aquatic or riparian habitat it supports.<sup>64</sup>

However, these levels are established by the districts themselves and may be too liberal; allowing a district to issue more CUPs than the affected water body can actually assimilate. Overly liberal water withdrawals can result in:

- Reduced water levels;
- Brackish and saltwater intrusion as freshwater is used up;
- Saltwater intrusion into wells;
- Creation of sink holes;
- Destruction of aquatic and literal habitat; and
- Increased nutrient loading.<sup>65</sup>

In 2013, the St. Johns River WMD, as well as the South Florida WMD and the Southwest Florida WMD, took part in a collaborative study to predict the future water needs of Central Florida and ascertain what amount of additional water withdrawals would be sustainable.<sup>66</sup> The collaboration resulted in a report entitled “Development of Environmental Measures for Assessing Effects of Water Level Changes in Lakes and Wetlands in the Central Florida Water Initiative Area.”<sup>67</sup> This report noted that the traditional reliance upon more and more consumptive use of water resources was not a sustainable method by which to accommodate anticipated population growth in Central Florida.<sup>68</sup> Rather, there was an immediate need to develop alternative water supplies and engage in stringent conservation as well as seek ways to modify the extent of water demand.<sup>69</sup>

In reaction to these findings, the St. Johns River WMD amended its CUP permitting rules to limit applicants within the Central

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63. FLA. STAT. § 373.042 (2014).

64. FLA. STAT. § 373.042 (2014).

65. S.W. FLA. WATER MGMT. DIST., WEST-CENTRAL FLORIDA’S AQUIFERS: FLORIDA’S GREAT UNSEEN WATER RESOURCES, [https://www.swfwmd.state.fl.us/publications/files/flas\\_aquifers.pdf](https://www.swfwmd.state.fl.us/publications/files/flas_aquifers.pdf) (last visited Feb. 7, 2016); U.S. GEOGRAPHICAL SURVEY, GROUNDWATER DEPLETION, <http://water.usgs.gov/edu/gwdepletion.html> (last visited Feb. 7, 2016).

66. Cent. Fla. Water Initiative’s Env’tl. Measures Team, *Development of Environmental Measures for Assessing Effects of Water Level Changes in Lakes and Wetlands in the Central Florida Water Initiative Area*, [http://cfwiwater.com/pdfs/CFWI\\_Environmental\\_Measures\\_finalreport.pdf](http://cfwiwater.com/pdfs/CFWI_Environmental_Measures_finalreport.pdf) (Nov. 2013) [hereinafter *Water Initiative*].

67. *Id.*

68. *Id.*

69. *Id.*

Florida Study Area to water allocations no greater than the predicted 2013 demand level.<sup>70</sup>

#### V. STANDARDS FOR ISSUANCE OF A CONDITIONAL USE PERMIT

Chapter 373, Florida Statutes is a detailed legislative work, which clearly identifies the goal of water resource preservation and methods by which to obtain such preservation.<sup>71</sup> In regards to Consumptive Use Permit applications, chapter 373, Florida Statutes does not create any entitlement of any person or party to obtain a CUP.<sup>72</sup> Rather, the chapter establishes standards which should be used by the water management districts in determining whether a CUP application should be granted.<sup>73</sup>

Considering the purpose of the law, which is to protect and preserve public water resources, this legislation instructs the water management district to evaluate the application primarily in regard to how such application will affect the public interest. In fact, the three key evaluation standards as set forth in section 373.223, are:

- Will not be harmful to the water resource;
- Will not be inconsistent with the public interest; and
- Is a “reasonable-beneficial” use of the water.<sup>74</sup>

While definitions of the first two elements are arguably easy to define, the definition of “reasonable-beneficial” use is not so self-evident.<sup>75</sup> Therefore, section 373.019, Florida Statutes sets forth the factors which a water management district should consider in order to determine if a requested consumptive use application is a “reasonable-beneficial” use. “Reasonable-beneficial” is defined as “the use of water in such quantity as is necessary for economic and efficient utilization for a necessary for economic and efficient utilization for a purpose and in a manner which is both reasonable and consistent with the public interest.”<sup>76</sup> Unfortunately, in issuing recent consumptive use permits, it appears that the subjective “reasonable beneficial use” element has become the prevailing, if not sole, consideration by the St. Johns River WMD in issuance of CUPs.

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70. FLA. ADMIN. CODE ch. 40C-1 (2014).

71. FLA. STAT. ch. 373 (2014).

72. *Id.*

73. FLA. STAT. ch. 373, pt. II (2014).

74. FLA. STAT. § 373.223 (2014).

75. FLA. STAT. § 373 (2014).

76. FLA. STAT. § 373.019(16) (2014).

It may be considered self-evident that no CUP should be issued by a water management district if the requested water withdraw would adversely affect the TMDLs, minimum flows and levels, or otherwise violate the Basin Management Action Plan for a given water body. Unfortunately, that which seems obvious in a theoretical world often becomes obscured during the permitting process. As two recent CUP permits in the Central Florida Coordination Area demonstrate, despite decades long deterioration of Central Florida's lakes, rivers, and springs, the St. Johns River WMD continues to permit unnecessary and harmful mass water withdrawals despite public objection that such withdrawals violate chapter 373 and misuse waters within the Public Trust.<sup>77</sup>

*A. St. Johns Riverkeeper,  
Inc. v. St. Johns River Water  
Management District*<sup>78</sup>

The St. Johns River (the "River") is a watershed approximately 310 miles long flowing northward from Indian River County to its release into the Atlantic Ocean just east of Jacksonville.<sup>79</sup> The river has historically been a source of commerce, recreation, and ecological diversity.<sup>80</sup> It teems with wildlife whose habitat can be found in the river's sawgrass lakes, spring runs, tributaries, and marsh beds.<sup>81</sup> Yet it is a notoriously slow moving, or sluggish, water body, flowing at a rate of approximately one inch per mile.<sup>82</sup> Due to the river's slow-moving nature, pollutants and saltwater intrusion do not quickly flush away as they might in a faster moving water body.<sup>83</sup> Additionally, natural or human-caused reductions to water flow in the St. Johns River also increase the duration and impact of pollutants and saltwater intrusion.<sup>84</sup>

In response to the numerous threats to the water quality, quantity, and health of aquatic life in the St. Johns River, concerned citizens formed the nonprofit corporation, St. Johns Riverkeeper,

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77. Answer Brief for Appellee, *St. Johns Riverkeeper, Inc. v. St. Johns River Water Mgmt. Dist.*, 54 So. 3d 1051 (Fla. 5th DCA 2011) (Nos. 5D09-1644, 5D09-1646).

78. *St. Johns Riverkeeper Inc. v. St. Johns River Water Mgmt. Dist.*, 54 So. 3d 1051 (Fla. 5th DCA 2011).

79. ST. JOHNS RIVER, <http://www.sjrwmd.com/stjohnsriver/> (last visited Feb. 7, 2016).

80. ST. JOHNS RIVER TIMELINE, <http://www.stjohnsriverkeeper.org/the-river/history/> (last visited Feb. 7, 2016).

81. ST. JOHNS RIVER, <http://www.sjrwmd.com/stjohnsriver/> (last visited Feb. 7, 2016).

82. *Id.*

83. *Id.*

84. Initial Brief for Appellant, *St. Johns Riverkeeper, Inc. v. St. Johns River Water Mgmt. Dist.*, 54 So. 3d 1051 (Fla. 5th DCA 2011) (Nos. 5D09-1644, 5D09-1646).

Inc. (“Riverkeeper”) in 2000.<sup>85</sup> The organization is dedicated to the “protection, preservation, and restoration of the ecological integrity of the St. Johns River watershed for current users and future generations.”<sup>86</sup> The group engages in ongoing water quality monitoring and community education efforts regarding the River.<sup>87</sup>

In February of 2008, the St. Johns River WMD (“District”) issued a Notice of Intent to issue a twenty year permit to Seminole County to withdraw an additional 5.5 million gallons per day (or 2,007,500 millions of gallons per year) of surface water for public water supply, and the Riverkeeper noticed.<sup>88</sup> Similarly, the City of Jacksonville, in northeast Florida, which relies upon the St. Johns River as a primary source of drinking water for its population of approximately one million people, objected to additional withdrawals due to the anticipated adverse impact on drinking water quality.<sup>89</sup> St. Johns County echoed concerns regarding adverse environmental impacts of this CUP, particularly in regard to the Wekiva River Aquatic Preserve and the Black Bear Wilderness Area in Seminole County.<sup>90</sup>

Seminole County’s application sought water withdrawal for a variety of uses, including household, commercial, industrial, landscape irrigation, utilities, and the catch-all: “essential types of uses.”<sup>91</sup> All the water would be withdrawn from the St. Johns River at the Yankee Lake Water Treatment Facility.<sup>92</sup> Notably, the water requested in Seminole County’s application exceeded the predicated 2013 water demand for Seminole County.<sup>93</sup> Arguably, such an application would be disallowed in the Central Florida Coordination Area since the St. Johns River WMD had committed to deny any CUP that exceeded predicted water demand.<sup>94</sup>

In asserting standing to challenge issuance of the permit, Jacksonville also noted that it had unique standing rights as a party to the 1998 River Accord (“Accord”).<sup>95</sup> This Accord memorialized the

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85. ST. JOHNS RIVERKEEPER, <http://www.stjohnsriverkeeper.org/> (last visited Feb. 7, 2016).

86. *Id.*

87. Initial Brief for Appellant, *supra* note 84.

88. Of the 5.5 millions of gallons per day requested by Seminole County, 4.4 would be used for potable water and the remaining 1.0 would be used to augment reclaimed water supply. However, only the potable water became subject to challenge. Answer Brief for Appellee, *supra* note 77.

89. *Id.*

90. St. Johns Riverkeeper, Inc. v. St. Johns River Water Mgmt. Dist., Case Nos. 08-1316, 08-1317, 08-1318 (DOAH Jan. 12, 2009), *modified in part by* FOR Nos. 2008-31, 2008-33, 2008-34 (SJRWMD Apr. 15, 2009).

91. Answer Brief for Appellee, *supra* note 77.

92. *Id.*

93. *Id.*

94. *Id.*

95. THE RIVER ACCORD: A PARTNERSHIP FOR THE ST. JOHNS, <http://www.coj.net/departments/river-accord.aspx> (last visited Feb. 7, 2016).

agreement between the FDEP, the St. Johns WMD, the Jacksonville Water and Sewer Expansion Authority, and the City of Jacksonville whereby the parties agreed to jointly invest \$700 million to improve the health and quality of the St. Johns River.<sup>96</sup> The Accord imposed obligations upon the City of Jacksonville to undertake certain capital improvements in order to reduce pollutant loads and improve water quality in the river.<sup>97</sup>

Due to its vast reliance upon and financial commitments toward the preservation of water quality within the St. Johns River, the City of Jacksonville challenged the District's proposed issuance of this permit as contrary to sound water conservation and preservation policies.<sup>98</sup> Joining the City in the brewing legal battle were both the Riverkeeper and St. Johns County.<sup>99</sup>

These concerned parties filed respective petitions for an administrative hearing with the District in March of 2008.<sup>100</sup> The Petitioners argued that the issuance of this CUP lacked adequate justification.<sup>101</sup> Specifically, Petitioners challenged issuance of the permit on the following bases:

- That the Seminole County failed to meet its burden to provide reasonable assurances that the proposed water use met standards for a CUP as set forth in chapter 373, Florida Statutes.
- Issuance of the permit was a detriment to the water quality improvement efforts mandated in the Central Florida Coordination Area.<sup>102</sup>

In regard to its assertion that the proposed permit would violate the standards of section 373.223, Florida Statutes, the Petitioners disputed the findings of the St. Johns River WMD Technical Staff Report determination that issuance of the CUP was a "reasonable and beneficial use" and was "consistent with the public interest."<sup>103</sup>

Rather, the City of Jacksonville argued that additional withdrawal of water would detrimentally slow, or even stagnate, the notoriously slow water flow of the River.<sup>104</sup> It noted that this additional withdraw of water could easily turn the historic slow flow

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96. *Id.*

97. *Id.*

98. Initial Brief for Appellant, *supra* note 84.

99. *Id.*

100. Petition for an Administrative Hearing, City of Jacksonville v. St. Johns River Water Mgmt. Dist. (DOAH 2008) (No. 08-1317).

101. *Id.*

102. *Id.*

103. Initial Brief for Appellant, *supra* note 84, at 10.

104. *Id.*



into a detrimental “slug” flow which would result in significant adverse impacts on aquatic species and water quality.<sup>105</sup> Such impacts would include disruption of the seasonable lifecycle changes of aquatic species, such as mating and spawning, as well as increase the extent and size of algae blooms which could deoxygenate the river and result in wholesale fish kills.<sup>106</sup>

Jacksonville argued that such significant water withdrawals would over-salinate the water, further degrading the River's quality and ability to support aquatic life, ultimately killing aquatic vegetation and wildlife.<sup>107</sup> At its mouth near Jacksonville, salt water from the Atlantic Ocean is able to enter and mix with the St. Johns River.<sup>108</sup> A certain amount of salinity results and is eventually filtered away by water flow.<sup>109</sup> However, when the river level is low, high tides from the ocean flood the river, resulting in greater salt water intrusion.<sup>110</sup> The extra salinity takes longer to dissipate from the River during low flow periods, resulting in longer and more extensive periods of salinity several miles into the River.<sup>111</sup>

In argument against issuance of the permit, the river advocates asserted that Seminole County's average daily household consumption of water was significantly higher than the average daily household consumption in either Jacksonville or in St. Johns County, demonstrating a lack of serious conservation efforts.<sup>112</sup> This difference was noted to be 103 gallons per capita daily (“gpcd”) in Jacksonville or 90 gpcd in St. Johns County versus the significantly higher 140 gpcd in Seminole County.<sup>113</sup> Petitioners then noted that Seminole County anticipated even greater average daily household use by 2025 than what it had in 2008.<sup>114</sup> The City of Jacksonville suggested that rather than allowing Seminole County nearly unfettered access to water from the St. Johns River through this CUP, that the District should demand more aggressive conservation techniques be implemented by Seminole County and a lesser CUP granted.<sup>115</sup>

In addition to their call for better conservation measures in lieu of massive additional water withdrawals, Petitioners disputed the District's finding that the St. Johns River was the “lowest acceptable

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105. *Id.*

106. *Id.*

107. *Id.*

108. *Id.*

109. Initial Brief for Appellant, *supra* note 84, at 10.

110. *Id.*

111. Petition for an Administrative Hearing, *supra* note 100.

112. Initial Brief for Appellant, *supra* note 84, at 12.

113. *Id.* See also Petition for an Administrative Hearing, *supra* note 100, at 12.

114. Initial Brief for Appellant, *supra* note 84.

115. Initial Brief for Appellant, *supra* note 84, at 12.

quality water source” available to Seminole County.<sup>116</sup> Rather, Petitioners noted that stormwater could be successfully used to fulfill Seminole County’s irrigation demands.<sup>117</sup> Of particular focus was Seminole County’s admission that it expected to have a surplus of reclaimed water by 2025, which should be used for irrigation rather than withdrawal of more water from the St. Johns River.<sup>118</sup>

Jacksonville further asked the District to postpone granting this additional water withdrawal until the District concluded its review of four other concurrently pending CUP applications, each of which would affect the St. Johns River, so that the District could properly evaluate if the combination of all five CUPs would require modification of the River’s TMDLs.<sup>119</sup> As explained by the Riverkeepers, the reduced water flow caused by so many water withdrawals might lead to increased nutrient loading from chemical runoff into the river.<sup>120</sup> With less water in the river to offset and dilute runoff, due to the additional conditional use withdrawals, the ability of the River to flush such chemicals would likely be dramatically reduced and thereby decrease the allowable TMDL.<sup>121</sup> In turn, a reduced TMDL would be an additional reason to deny Seminole County’s application.<sup>122</sup>

Further, Jacksonville argued that if the Water Management District did in fact issue all five pending CUPs, this massive water withdrawal would result in direct harm to Jacksonville by forcing the City and other stakeholders to develop new basin plans at a significant cost of time and money.<sup>123</sup> Jacksonville noted that section 373.016, Florida Statutes requires water management districts to evaluate the cumulative impacts of all water withdrawals before issuing additional CUPs, which the St. Johns WMD had failed to do.<sup>124</sup>

Similarly, the parties reminded the District that it could not adequately determine that the environmental and economic harm caused by issuance of this CUP would be reduced to an acceptable level, as required by section 373.223, Florida Statutes, since the District was just starting a two year study of the St. Johns River to ascertain the extent and cause of environmental concerns in the

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116. Petition for an Administrative Hearing, *supra* note 100, at 12.

117. Initial Brief for Appellant, *supra* note 84, at 14.

118. *Id.* See also Petition for an Administrative Hearing, *supra* note 100, at 12.

119. Initial Brief for Appellant, *supra* note 84.

120. *Id.* at 8.

121. *Id.*

122. *Id.*

123. *Id.*

124. *St. Johns Riverkeeper, Inc.*, 54 So. 3d at 1053. The Riverkeepers further argued that the threat of exceeding TMDLs was a violation of section 373.019, Florida Statutes.

River.<sup>125</sup> In fact, as noted by the Riverkeepers, the District at that time had still not even promulgated minimum flow and level standards for the river.<sup>126</sup> In addition to the parties' allegations that demonstrable harm would be caused to the St. Johns River by 1) Seminole County's 25.6 million gallon per day withdrawal and 2) a prediction that additional harm would be caused to the river by the compounded affect of five new, concurrently issued CUPs, the parties were also critical of the District's failure to include any standards to address the timing or management of the proposed water withdrawals so as to minimize additional environmental impacts.<sup>127</sup>

Jacksonville's petition was referred to the Division of Administrative Hearings pursuant to the Florida Administrative Procedures Act.<sup>128</sup> Seminole County was granted intervener status to participate in this administrative hearing and associated legal actions.<sup>129</sup> A ten day hearing was held in October of 2008 before Administrative Law Judge, Lawrence Johnston.<sup>130</sup> During the course of this hearing, Seminole County and the District agreed to a slightly modified permit which limited withdraw on any day(s) between April 1 and September 15 that followed a day when the Iron Bridge wastewater treatment facility has discharged polluted water into the St. Johns River.<sup>131</sup>

After ten days of testimony, on January 12, 2009, Judge Johnston issued a Recommended Order advocating issuance of the permit.<sup>132</sup> This order dismissed or disregarded most of the expert testimony presented by permit opponents.<sup>133</sup> While acknowledging disparities in several aspects of testimony from Seminole County's experts, including the key issue of Seminole County's future water demands, Judge Johnston found these disparities did not devalue the evidence.<sup>134</sup>

Although not apparently asserted by experts from any party, Judge Johnston also rendered his own factual conclusion that

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125. *Id.* at 1052. The study was known as the *St. Johns River Water Withdrawal Cumulative Impact Study*.

126. *Id.* at 1053; *see also* Concerned Citizens of Putnam Cnty. for Responsible Gov't, Inc. v. St. Johns River Water Mgmt. Dist., 622 So. 2d 520 (Fla. 5th DCA 1993).

127. *St. Johns Riverkeeper, Inc.*, 54 So. 3d at 1053.

128. FLA. STAT. ch. 120 (2014).

129. Memorandum from Stanley Niego to Kris Davis (Mar. 19, 2009) (on file with author) (regarding adoption of final order for DOAH Case No. 08-1316, 08-1317, 8-1318).

130. *Id.*

131. *St. Johns Riverkeeper, Inc. v. St. Johns River Water Mgmt. Dist.*, Case Nos. 08-1316, 08-1317, 08-1318 (DOAH Jan. 12, 2009), *modified in part by* FOR Nos. 2008-31, 2008-33, 2008-34 (SJRWMD Apr. 15, 2009).

132. *Id.*

133. *Id.*

134. *Id.*

Seminole County's future withdraw of water from the St. Johns River would not cause adverse affect since several cities had past CUP approvals.<sup>135</sup> Judge Johnston dismissed concerns regarding salinity, nutrient loading, and extensive algal blooms.<sup>136</sup> He also dismissed Jacksonville's suggestion that the CUP should incorporate the conservation measures set forth in the District's own Florida Water Start Program, finding it not appropriate to include a CUP requirement to implement such conservation tools.<sup>137</sup>

Judge Johnston concluded that issuance of the permit would be in the public interest because the environmental harm caused to the St. Johns River by this additional water withdrawal was at an acceptable amount.<sup>138</sup> As to the assertion that harm would be caused to both the Wekiva River Aquatic Preserve and the Seminole Black Bear Wilderness Area, he simply deferred consideration of those concerns to some unnamed further required permitting.<sup>139</sup> Similarly, the judge passed on any evaluation of adverse impacts at the pipeline and treatment facility, finding them outside his scope of review of the public interest component of CUP review.<sup>140</sup>

In accordance with the Florida Administrative Procedures Act, after the parties filed exceptions to the ALJ Order, a final determination on the CUP was considered by the St. Johns Water Management District Governing Board.<sup>141</sup> In a close 4-3 vote, on April 13, 2009, the District Governing Board adopted the Recommended Order to grant the permit to Seminole County modified only in regard to the withdrawals immediately after an Iron Bridge discharge.<sup>142</sup>

Not surprisingly, on August 28, 2009 the City of Jacksonville and the St. Johns Riverkeeper, Inc. filed an appeal before the Fifth District Court of Appeals challenging issuance of this permit.<sup>143</sup> Jacksonville limited its appeal to the issue of whether Seminole County had provided "reasonable assurance" that the 5.5 million gallons per day was necessary for "economic and efficient utilization."<sup>144</sup> Jacksonville objected to Judge Johnston's determination that Seminole County would be denied by the District, in whole or in part, its concurrent application to withdraw

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135. *Id.*

136. *Id.*

137. *St. Johns Riverkeeper, Inc. v. St. Johns River Water Mgmt. Dist.*, Case Nos. 08-1316, 08-1317, 08-1318 (DOAH Jan. 12, 2009), *modified in part* by FOR Nos. 2008-31, 2008-33, 2008-34 (SJRWMD Apr. 15, 2009).

138. *Id.*

139. *Id.*

140. *Id.*

141. FLA. STAT. § 120.57 (2008).

142. *St. Johns Riverkeeper*, 54 So. 3d at 1052.

143. *Id.*

144. *Id.*

25.6 mgd from the Floridan Aquifer.<sup>145</sup> Jacksonville noted that such assumption was nothing more than a prediction, and if the judge were wrong and the entire concurrent application were in fact approved, then Seminole County would be able to withdraw significantly more water than the amount for which it had a demonstrable need.<sup>146</sup>

Jacksonville also argued that the consultant retained by Seminole County to demonstrate potable water needs for the county over the next twenty years failed to demonstrate that there was not actually any need for new potable water sources until at least the seventh year of the permit period and no significant need for potable water until the eleventh year of the permit period.<sup>147</sup> Describing this as water “banking”, the City of Jacksonville argued that a CUP should not allow such excessive amounts of water withdrawal.<sup>148</sup>

The Riverkeepers also argued, via a separate appellate brief, that the District’s own consumptive use expert determined that Seminole County would not need any additional water for at least twenty years.<sup>149</sup> The Riverkeepers further asserted that the condition prohibiting withdraw within one day of a discharge from the Iron Bridge facility, was illusory in that Seminole County did not own or control the Iron Bridge facility.<sup>150</sup>

In a dismissive response to these arguments, the District explained that it could sort out any excess allotments when it reviewed the concurrent groundwater permit application.<sup>151</sup> It then adopted the ALJ Recommended Order with minor modifications and inclusion of the Iron Bridge discharge limitation.<sup>152</sup>

On February 18, 2011, the Fifth District Court of Appeals affirmed the Order of the District Governing Board with little discussion as to its merits.<sup>153</sup> As to the merits of the CUP, the court only noted that the “administrative proceeding was for the purpose of ensuring that Seminole’s CUP would not harm the St. Johns River or that any harm would be offset.”<sup>154</sup> Deferring to the Administrative Law Judge’s conclusion “that there was no proof of

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145. *Id.*

146. *Id.*

147. *St. Johns Riverkeeper, Inc.*, 54 So. 3d. at 1052. Such testimony demonstrated a need of 0.46 MGD in year 7 with no further increase until year 11.

148. *Id.*

149. *Id.*

150. *Id.*

151. *Id.*

152. *St. Johns Riverkeeper, Inc.*, 54 So. 3d. at 1052.

153. The Court’s discussion centered upon the standing of the St. Johns Riverkeeper, Inc. In holding that the group did have standing the Court reiterated that the law in regard to standing must be analyzed separately from analysis of the merits of the case. *Id.*

154. *Id.*

harm or that the harm would be offset” the court affirmed without further analysis of the CUP application.<sup>155</sup>

*B. City of Groveland  
v. St. Johns River Water  
Management District*<sup>156</sup>

Niagara Bottling Company, LLC is a California bottling company headquartered in Ontario, Canada.<sup>157</sup> However, it is allowed to do business in Florida as a registered foreign corporation.<sup>158</sup> The company operates numerous bottling facilities that withdraw water throughout the United States and resell this water domestically and internationally.<sup>159</sup> In 2009, Niagara operated a bottling facility at Christopher C. Ford Commerce Park in Lake County to the northwest of the City of Groveland.<sup>160</sup>

In 2009, Niagara sought a Consumptive Use Permit to withdraw an additional 484,000 gallons of water per day (176,660,000 gallons per year) from three wells to be drilled into the Upper Floridan Aquifer.<sup>161</sup> Niagara was straightforward in noting that the sole purpose of this requested water withdrawal was a commercial enterprise to increase revenues for the corporation.<sup>162</sup> The application stated the purpose of the withdrawal was primarily to bottle and resell the water (with approximately 30,000 mgd as a coolant for facility equipment.)<sup>163</sup> As a result, 363,000 gallons would be bottled and sold for profit and 91,000 would be disposed of as wastewater each day.<sup>164</sup>

The associated conservation plan proposed by Niagara detailed only basic efforts to reduce water spillage and leaks in the facility.<sup>165</sup> In credit to Niagara, its request for 484,000 million gallons per day was only 74% of the productive capacity of its production equipment, the average productivity of the facility.<sup>166</sup> Niagara could have requested sufficient water entitlements to

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155. *Id.*

156. *City of Groveland v. St. Johns River Water Mgmt. Dist.*, Case No. 08-4201 (Fla. DOAH Aug. 7, 2009) (regarding SJWMD Consumptive Use Permit #114010).

157. *Id.*

158. NIAGARA CONTACT US PAGE, [www.niagarawater.com/contact-us/](http://www.niagarawater.com/contact-us/) (last visited Feb. 7, 2016).

159. *City of Groveland v. St. Johns River Water Mgmt. Dist.*, ALJ Recommended Order, Case No. 08-4201 (Fla. DOAH Aug. 7, 2009).

160. *Id.*

161. *Id.* at 6.

162. *Id.*

163. *Id.*

164. *Id.* at 7.

165. *City of Groveland v. St. Johns River Water Mgmt. Dist.*, ALJ Recommended Order at 8, Case No. 08-4201 (Fla. DOAH Aug. 7, 2009).

166. *Id.* at 10.

satisfy 100% daily capacity.<sup>167</sup> Niagara also proposed to send a portion of the wastewater produced by its bottling facility to a nearby golf course or municipality for irrigation purposes, reducing the use of potable water at the facilities.<sup>168</sup>

The St. Johns Water Management District, as the reviewing authority, only added a single requirement to this basic conservation plan, namely that Niagara monitor environmental quality of the water in Lake Arthur.<sup>169</sup> However, this monitoring requirement failed to include the logical next step: a requirement that Niagara remediate or mitigate any degradation of environmental quality indicated by such monitoring.

Rather than limit this commercial water withdrawal or create assurance that the Public Trust waters would be protected from degradation, the District placed no substantive protections in place. Disturbingly, one reviewing official actually congratulated Niagara on its conservation plans noting that it was far better than prior conservation plans the District had required of other bottling companies.<sup>170</sup>

Due to concerns that this CUP would limit future public water supply, and harm water resources and related natural systems, Lake County and the City of Groveland jointly filed a petition with the District seeking an administrative hearing to challenge issuance of this permit.<sup>171</sup> This petition alleged that the proposed CUP failed to meet legal standards of section 403.412(5), Florida Statutes, in that it was not a reasonable-beneficial use, it interfered with presently existing legal uses of water, and was inconsistent with the public interest.<sup>172</sup>

The Petitioners noted the dramatic inconsistency of the District's recent water restrictions upon local Lake County residents' water usage while permitting Niagara to drawdown the superficial aquifer, the Upper Floridan Aquifer, and the Lower Floridan Aquifer, by millions of gallons per day, thereby reducing water supply available to community residents.<sup>173</sup>

Further, Petitioners noted that in Groveland's own preexisting CUP, the District had required Groveland to utilize alternative

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167. *Id.*

168. *Id.* at 12.

169. *Id.* at 8.

170. *Id.* at 12.

171. *City of Groveland v. St. Johns River Water Mgmt. Dist.*, Joint Petition, Case No. 08-4201 (Fla. DOAH Aug. 28, 2008). The City and Lake County jointly filed a Petition for Administrative Hearing on Aug. 11, 2008. Lake County subsequently withdrew its petition on Mar. 3, 2009. The City of Groveland withdrew a number of claims on Mar. 26, 2009, including its claim that the city would be specially injured by the permit, that the permit would not adversely affect minimum flows and level or water quality.

172. *Id.* at 8.

173. *Id.* at 3.

water sources.<sup>174</sup> Yet it had placed no similar condition on the out-of-state bottler.<sup>175</sup> Such disparate treatment made little sense since Groveland's permit predated Niagara's and, if there was a need for conservation through alternative water sources in the past, such need would have only grown since Groveland had begun withdrawing water for its citizens.<sup>176</sup> Further, the citizens of Groveland, Florida were the very persons for whom the public waters were held in trust.<sup>177</sup> Why did a Consumptive Use Permit for out-of-state commercial sale of the water have less stringent conservation conditions than the CUP which enabled a local government to provide potable water to the local residents?<sup>178</sup>

A multi-day administrative hearing was held by Administrative Law Judge Bram Canter in April of 2009.<sup>179</sup> Due to a pre-trial stipulation in which Groveland retracted many of its claims, the hearing was limited to the single issue of whether Niagara demonstrated that the quantity of water requested was necessary for economic and efficient utilization.<sup>180</sup> As in the Seminole County hearing discussed above, Groveland asserted that the massive quantity of water requested by Niagara amounted to prohibited "water banking."<sup>181</sup>

Groveland also set forth the most obvious argument against this additional withdraw from the Floridan Aquifer: bottled water could be provided by any number of existing bottling companies with existing water entitlements, so an additional CUP was not necessary to promote the public interest.<sup>182</sup> An argument which might have been raised, but was not, is that bottled water itself is not a necessity since nearly all areas of the State and country are serviced by public utilities or private wells. These utilities and wells deliver treated water to meet nearly all potable water needs and at far less a cost than bottled water companies.<sup>183</sup> The limited need which does exist for bottled water is arguably already satisfied

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174. *Id.* at 4.

175. *Id.* Interestingly, Niagara's CUP exceeded the total consumptive use from the Florida Aquifer permitted to the entire City of Groveland of 368,000 MGD.

176. *Id.*

177. *Id.*

178. *Id.*

179. *City of Groveland v. St. Johns River Water Mgmt. Dist.*, ALJ Recommended Order at 1, Case No. 08-4201 (Fla. DOAH Aug. 7, 2009).

180. *Id.* at 2.

181. *Id.* at 10.

182. *City of Groveland v. St. Johns River Water Mgmt. Dist.*, Joint Petition at 16, 5D09-3765 (Fla. DOAH Aug. 28, 2008).

183. Stephen J. Dubner, *The Strange Economics of Water, and Why It Shouldn't Be Free*, FREAKONOMICS (Apr. 15, 2011, 12:00 pm) <http://freakonomics.com/2011/04/15/the-strange-economics-of-water-and-why-it-shouldnt-be-free-a-guest-post/>.



by numerous bottling companies using existing entitlements-such as Niagara's own preexisting CUP allotments at the Lake County facility.

Ultimately Judge Canter found the Petitioner's arguments regarding the lack of public need for Niagara to bottle and sell more water to be irrelevant. Noting that "no statute or rule requires Niagara to demonstrate that this particular CUP is the only means to meet consumer demand for bottled water" the judge looked not to whether the public needed this water, but rather, whether the corporation needed this water.<sup>184</sup> Expanding upon this theory, the judge stated, "the District does not evaluate the appropriateness of the associated business or activity, but only whether the applicant can reasonably be expected to use the requested volume of water, and to so efficiently based on the industry standard."<sup>185</sup> Yet Judge Canter failed to note what precedent or authority he had relied upon in determining whether chapter 373 standards had been met, appearing to rely solely upon whether Niagara could demonstrate that it could commercially use the water.

Nor did Judge Canter consider what net environmental harm could be caused by the water withdrawal. Rather, the judge determined that Niagara had demonstrated "by a preponderance of the evidence that the potential for environmental harm ha[d] been reduced to an acceptable amount."<sup>186</sup> With that standard of review, and focusing on the wastewater to be generated, the judge then concluded that since almost all industrial and commercial water withdrawals convert clean water to wastewater, the only necessary analysis was whether Niagara's proposed conversion of 91,000 gallons per day of clean water to wastewater was "efficient" by industrial standards.<sup>187</sup> Relying on Niagara's assertion that the requested withdrawal was the anticipated amount its facility could process each day, the judge found that his efficiency standard had been satisfied.<sup>188</sup>

As the designated finder of fact, Judge Cantor essentially blocked any appellate review regarding the potential environmental harm by noting, "the wetlands and lakes in the area are not currently showing signs of environmental harm as a result of existing groundwater withdrawals."<sup>189</sup> This determination was

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184. *Groveland v. St. Johns River Water Mgmt. Dist.*, ALJ Recommended Order at 10, Case No. 08-4201 (Fla. DOAH Aug. 7, 2009).

185. *Id.*

186. *Id.* at 32.

187. *Id.* at 11.

188. *Id.*

189. *Id.* at 18.

made in reliance upon the applicant's report.<sup>190</sup> Yet from the record, it is clear that one of Niagara's own experts would not testify that this withdrawal of 484,000 gallons each day was ecologically sound, but rather could only assert that the ecological harm was "acceptable."

In fact, Groveland's expert testified that the drawdown would adversely affect the local ecology and habitat by reducing the geographical area of the wetlands.<sup>191</sup> While this expert opinion seems in-line with the logic that the daily withdrawal of thousands of gallon of water could result in reduced wetlands, which rely upon water to remain wet, Judge Canter disregarded Groveland's expert's opinion determining that it was based upon "unconventional methodology" and "unreasonable assumptions."<sup>192</sup>

At the conclusion of this extensive hearing, Judge Canter issued a Recommended Order in favor of issuance of the 484,000 gallons per day, or up to 176,660,000 gallons per year, CUP.<sup>193</sup> Upon consideration of the Administrative Law Judge's order, on September 25, 2009, the District Executive Director issued his agency's Final Order adopting the Recommended Order essentially in its entirety.<sup>194</sup> Groveland filed an appeal with the Fifth District Court of Appeals, but voluntarily dismissed it.<sup>195</sup>

The unfortunate precedent which may be set by this case, at least in so far as the water management district policy is set, is that the districts may avoid the public interest evaluation required by chapter 373, Florida Statutes if a commercial enterprise can simply demonstrate that: 1) they have the ability to withdraw the requested water, 2) the ability to convert it to a profitable enterprise, and 3) the adverse effects of such withdrawal is no worse than the industry standard. Such evaluation would skip the very key issue of chapter 373, Florida Statutes: is the withdrawal of water for a commercial use, such bottling for resale by an out-of-state bottling company, in the public interest of the citizens of Florida?

Unfortunately, the unhappy conclusion of this case was not the end of the story. Niagara thereafter filed a civil suit against the City of Groveland asserting damages for tortious interference with

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190. *Groveland v. St. Johns River Water Mgmt. Dist.*, ALJ Recommended Order at 18, Case No. 08-4201 (Fla. DOAH Aug. 7, 2009).

191. *Id.* at 19.

192. *Id.* at 20.

193. *Id.*

194. *City of Groveland v. St. Johns River Water Mgmt. Dist.*, Case No. 08-4201 (Fla. SJRWMD Sept. 25, 2009).

194. *Id.* at 19.

195. Fifth District Court of Appeals Case 5D09-3765 was dismissed via Groveland's voluntary dismissal, dated Dec. 7, 2009.

business relationships, among other claims.<sup>196</sup> In an effort to avoid further protracted litigation, in 2010 the City agreed to settle the litigation with the initial payment of \$10,000 of taxpayers money to Niagara, plus up to an additional \$30,000 for Niagara's expenses relating to modification of permits, plus all of Niagara's impact fees and connection fees, as well as a \$1,240,000 credit for Niagara's city sewer utility account.

Just three years later, Niagara came back to the St. Johns River WMD with an application to nearly double this 484,000 gallon per day withdraw to 910,000 gallons per day.<sup>197</sup> In following its liberal consumptive use permitting for commercial bottling facilities, on February 12, 2014, the St. Johns Water Management District issued a permit to allow Niagara to withdraw of an additional 332,150,000 million gallons per year.<sup>198</sup> No opponents dared to appeal this doubling of the water withdrawal.<sup>199</sup>

## VI. CONCLUSION

These recent decisions by the St. Johns River Water Management District, affirmed by the Florida Division of Administrative Hearings and implicitly approved by Florida Department of Environmental Protection, indicate a lack of effort to curb excessive and unnecessary water withdrawals from entities seeking to use public trust waters. In fact, it appears that the first two elements for review of any CUP: 1) whether the water withdrawal will harm the water resource, and 2) whether such withdrawal will be consistent with the public interest, have been completely disregarded by the District so that only the third element, whether the requested CUP is a "reasonable-beneficial" use, is considered at all. In review of this third standard, it seems that the District has set the bar for what constitutes a "reasonable-beneficial" use quite low. Such interpretation by the District hamstring local governments, such as the City of Jacksonville and the City of Groveland, in attempting to preserve and protect their local water resources since chapter 373, Florida Statutes preempts all local government authority over water withdrawals.

As demonstrated by *St. Johns Riverkeeper, Inc. v. St. Johns River Water Management District*, the District may allow a CUP

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196. *City of Groveland v. St. Johns River Water Mgmt. Dist.*, Settlement Agreement at 1, Case No. 08-4201 (Jan. 3, 2010) (DOAH 2008; SJWMD 2008).

197. Consumptive Use Permit, *St. Johns River Water Mgmt. Dist. to Niagara Bottling*, Permit No. 114010-4 (Feb. 12, 2014).

198. *Id.*

199. E-mail from Pamela Perry, paralegal for St. Johns River Water Management District, confirming lack of appeal of CUP 2-069-114010-4 (Mar. 3, 2015) (on file with author).

applicant to withdraw far in excess of demonstrable need. In that case, opponents to the CUP demonstrated that Seminole County had a significantly higher per capita rate of water consumption than comparable Central Florida communities and such per capita consumption had actually grown in recent years, indicating a lack of substantive conservation efforts.<sup>200</sup> Yet the District failed to require the County to engage in conservation measures which would reduce its water consumption to the level of conservation demonstrated by other Florida communities.<sup>201</sup> Permit opponents also demonstrated that the water requested by Seminole County for immediate withdraw was far in excess of what was then needed by the County.<sup>202</sup> Yet the District failed to limit the allowable water withdrawal to this demonstrable need. The District did very little to ensure that this CUP for 2,007,500 gallons per year was the minimum necessary to meet Seminole County's potable use needs nor that it would be carefully conserved.

Then, in *City of Groveland v. St. Johns River Water Management District*, a case in which the District allowed a Canadian-based bottling company, Niagara Bottling, to withdraw 177 million gallons of water per year from the St. Johns River watershed despite objection from local governments Groveland and Lake County regarding the impact of this withdraw on local citizens' water resources and environmental harm to community waters.<sup>203</sup> Yet neither the District nor the Administrative Law Judge considered whether such an expansive gift of Florida waters to Niagara was actually in the public interest of Florida citizens.<sup>204</sup> Rather, they simply evaluated whether this commercial enterprise could use and profit from the water withdrawal.<sup>205</sup> It is difficult to see how any aspect of this commercial enterprise, creating profit for a foreign corporation, had any benefit to the Florida public interest.

Chapter 373, Florida Statutes was drafted to create a reasonable balance between conserving and sustaining Florida's Public Trust waters for current and future residents while still enabling use of the waters for "reasonable beneficial" uses.<sup>206</sup> Yet this balancing test requires basic conservation efforts from the CUP applicant to

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200. *St. Johns Riverkeeper Inc. v. St. Johns River Water Mgmt. Dist.*, 54 So. 3d 1051 (Fla. 5th DCA 2011). See also Cynthia Barnett, *Our Water Our Florida: A Water Ethic for Florida*, COLLINS CENTER FOR PUBLIC POLICY (Feb. 2011) (noting that average daily water consumption in Sarasota County is less 80 gallons per day).

201. *St. Johns Riverkeeper Inc. v. St. Johns River Water Mgmt. Dist.*, 54 So. 3d 1051 (Fla. 5th DCA 2011).

202. *Id.*

203. *City of Groveland v. St. Johns River Water Mgmt. Dist.*, ALJ Recommended Order, Case No. 08-4201 (Fla. DOAH Aug. 7, 2009).

204. *Id.*

205. *Id.*

206. FLA. STAT. § 373.016(4)(a) (2014).

demonstrate that it has attempted to reduce the water needed.<sup>207</sup> Further, the District should evaluate whether the applicant will use the water to benefit Florida citizens or private commercial interests, local or foreign interests. Further, the District should evaluate if there existing a demonstrable need for the amount of water requested during the period requested or if the applicant is simply “water banking.” And of course, the environmental impact of any water withdraw should be a paramount consideration prior to issuance of any permitted consumptive use.

A Consumptive Use Permit can last for twenty, even fifty years.<sup>208</sup> Therefore, wasteful CUPs and the potential harm they cause to the water supply and environment can have very long-lasting effects. It is time to evaluate if selling off the already stressed ground and surface waters of Florida to foreign commercial bottling interests could ever pass the public interest requirement of chapter 373, Florida Statutes. Or, at least, where such CUPs would not provide much benefit to the public interest, require the applicant and beneficiary to pay a fair market value to the State of Florida for such waters. This fee which might then be used to remediate some of the damage caused by massive withdrawals from our public waters.

Communities in other states have in fact stood up to bottling companies like Niagara and halted the withdrawal of their public resources for corporate profit. In 2008, the community of McCloud, California stopped Nestle Corporation from pumping water from from Mount Shasta Springs.<sup>209</sup> In Wells, Maine the community fought an exhaustive battle to stop Nestle from opening a well to feed its Poland Springs brand.<sup>210</sup> As explained by Wenonah Hauter, the executive director of Food and Water Watch, “[c]ommunities around the country are mobilizing to stop the confiscation of their water by corporate interests. They want control of their water for their own purposes, not to see it commoditized and sold back to them at over 250 times its actual value.”<sup>211</sup> It is time for Florida citizens to speak up too and defend our own water resources.

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207. FLA. STAT. §§ 373.016, .227 (2014).

208. FLA. STAT. § 373.236 (2014).

209. Press Release, Food & Water Watch, Activists Celebrate Nestle Withdrawal from McCloud, Calif. (Sept. 11, 2009) <http://www.foodandwaterwatch.org/news/activists-celebrate-nestle-withdrawal-mccloud-california>.

210. PBS News Hour, *Bottling Giant, Maine Residents Battle Over Water* (Aug. 18, 2008). [http://www.pbs.org/newshour/bb/environment-july-dec08-waterbottle\\_08-18/](http://www.pbs.org/newshour/bb/environment-july-dec08-waterbottle_08-18/).

211. Press Release, Food & Water Watch, Florida Fights Back Against Bottled Water Extraction (Oct. 2, 2008) [http://www.alternet.org/story/103386/florida\\_fights\\_back\\_against\\_bottled\\_water\\_extraction](http://www.alternet.org/story/103386/florida_fights_back_against_bottled_water_extraction).

# A TAXING ENDEAVOR: LOCAL GOVERNMENT PROTECTION OF OUR NATION’S COASTS IN THE “WAKE” OF CLIMATE CHANGE

SIMONE SAVINO\*

*“Climate change is a global problem with local solutions.”*

- Kevin Murphy, Berks County Community Foundation, Pa.

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\* J.D. 2015, Certificate in Environmental, Land Use, and Energy Law, Florida State University College of Law, Florida Bar City & Local Government Section, Top Local Government Scholar 2014-2015. I would like to thank Professor Shi-Ling Hsu for his encouragement, assistance, and affinity for climate change issues. Thank you to Keith Savino and Garrett Brown, for their moral support throughout the writing process. I would also like to thank Professor Hannah Wiseman for believing in me and my writing during a time I forgot to believe in myself.

## I. INTRODUCTION

A storm is brewing, and not just in our nation's coastal waters. The effects of climate change are becoming alarmingly apparent: sea levels are rising<sup>1</sup>, storm surges are intensifying and ocean temperatures are warming at increasing speeds. Higher storm surges have led to increased flooding in coastal zones and nearby low-lying regions.<sup>2</sup> The need for greater disaster preparedness in areas vulnerable to storm surges is evident, not just in the United States, but worldwide.<sup>3</sup> As a direct result, coastal towns and cities have been left with the daunting task, and cost, of implementing littoral adaptation measures such as beach renourishment of coastal erosion and sand dune restoration and preservation.

Naturally occurring sand dunes protect against inland flooding by absorbing storm surge impacts, and are known for providing shelter and resources to plants and animals that live on the shore.<sup>4</sup> Once naturally occurring sand dunes diminish, they are hard to replace and allow inland communities to become extremely vulnerable without a buffer sitting between them and the shore. Granted, sand dunes alone cannot be a panacea for all storm surge problems. Sand dune restoration works most effectively in conjunction with human development efforts and local land-use planning to best preserve our coasts.<sup>5</sup>

Local coastal communities must be developed to accommodate additional methods for coastal protection, utilizing a universal implementation system that avoids risk to "suckers" and "free-riders."<sup>6</sup> Specifically, local governments should implement a special

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1. In the last century, the Global Mean Sea Level (GMSL) has risen by four to eight inches (ten to twenty centimeters) and the annual rate of rise is about twice the average speed it used to be. See *Sea Level Rise*, NAT'L GEOGRAPHIC, <http://ocean.nationalgeographic.com/ocean/critical-issues-sea-level-rise/> (last visited Jan. 29, 2016).

2. See generally Susmita Dasgupta, et al., *Climate Change and the Future Impacts of Storm-Surge Disasters in Developing Countries*, CTR. FOR GLOBAL DEV. (Sept. 2009), [http://www.cgdev.org/files/1422836\\_file\\_Future\\_Storm\\_Surge\\_Disasters\\_FINAL.pdf](http://www.cgdev.org/files/1422836_file_Future_Storm_Surge_Disasters_FINAL.pdf)

3. *Id.*

4. See generally *Dune Protection and Improvement*, DEL. DIV. OF WATERSHED STEWARDSHIP, <http://www.dnrec.delaware.gov/swc/shoreline/pages/duneprotection.aspx> [hereinafter *Dune Protection*]; see also *Building Back the Sand Dunes*, FLA. DEP'T OF ENVTL. PROT., <http://www.dep.state.fl.us/beaches/publications/pdf/bldgbkvw.pdf> [hereinafter *Building Back*].

5. See Rachel Nuwer, *Sand Dunes Alone Will Not Save the Day*, N.Y. TIMES: GREEN ENERGY, THE ENVIRONMENT, AND THE BOTTOM LINE (Dec. 4, 2012), [http://green.blogs.nytimes.com/2012/12/04/sand-dunes-alone-will-not-save-the-day/?\\_php=true&\\_type=blogs&\\_php=true&\\_type=blogs&\\_r=1](http://green.blogs.nytimes.com/2012/12/04/sand-dunes-alone-will-not-save-the-day/?_php=true&_type=blogs&_php=true&_type=blogs&_r=1).

6. Coastal communities and beachfront property owners that pay for the addition of sand in an attempt to restore local beaches have been generally classified as "suckers." Suckers pay to build up the beaches, but their replenishment efforts benefit the coastlines of neighboring, "free-riding" communities, who do not contribute to the nourishment, yet benefit

assessment, similar to that of Portland, Oregon's proposed Transportation User Fee, in which homeowners and businesses pay a flat monthly fee to cover the costs of shoreline adaptation methods.<sup>7</sup> The fee will be a charge to users of the city or town's coastal infrastructure, based on estimates of use they generate.<sup>8</sup> Inland and shorefront property owners will uniformly benefit by municipalities evenly splitting coastal adaptation measures between them.

This paper focuses on the implementation and adaptation of a local government tax for the construction, planning and payment of sand dunes to protect the nation's coastlines against storm surges. Part I discusses the effects of climate change on storm surges, beach renourishment, and inland flooding and outlines why the need for action is imminent.

Part II begins by examining current mitigation efforts, such as sand dune formation, and growth, and the policy issues behind other local government adaptation efforts. Part II then addresses local government's current responses to coastal regulation, the issue of "free-riding" and prescribes a solution in the form of a legislative tax. This part will close by addressing why it is crucial for municipalities to implement a uniform solution to the high cost of coastline protection.

Finally, Part III will provide an in-depth analysis of implementing a special assessment fee, such as the Portland, Oregon Transportation User Fee, as a model solution for coastal renourishment efforts. Part III concludes with a projected analysis of how a user fee will help construct, plan, and pay for adequate coast line protection.

## II. STORM SURGES, SAND DUNES & THE CHANGING CLIMATE

To have an accurate understanding of the policy issues local governments are facing, it is helpful to first consider the effects of climate change on our coastal waters. This section will provide an overview of how storm surges have been affected by climate change and the direct impact they have on the nourishment and preventative effects of sand dunes.

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from its effects. See *Beachfront Nourishment Decisions: The "Sucker-Free Rider" Problem*, PHYS.ORG, <http://phys.org/news/2013-04-beachfront-nourishment-decisions-sucker-free-rider.html> (last visited Jan. 29, 2016).

7. See Max Barr, *City Leaders Announce Plans for Portland Street Fee*, KATU.COM (May 22, 2014), <http://www.katu.com/news/local/City-leaders-announce-plans-for-Portland-street-fee-260290061.html>.

8. See *Our Streets Transportation User Fee*, CITY OF PORTLAND, BUREAU OF TRANSP., <https://www.portlandoregon.gov/transportation/article/491497> (last visited Dec. 11, 2014).



*A. The Creation of Storm Surges  
and the Effects of Climate Change*

Storm surges are caused by unprecedented changes in water level due to the presence of a storm. They occur when rough waters, generated by hurricanes or tropical storm winds, "rise over and above the predicted astronomical tide."<sup>9</sup> Generally, the winds around the eye of a hurricane blow on the surface of the water, producing a vertical circulation under the water.<sup>10</sup> The vertical disruptions of storm surges are harder to detect in deep waters.<sup>11</sup> However, once a hurricane reaches shallow waters near coastlines, the vertical circulations start to strike the ocean floor.<sup>12</sup> The water's vertical momentum can no longer go down, so instead it is pushed up and inland, resulting in a storm surge.<sup>13</sup> Surges generally occur when winds are blowing onshore. The strongest hurricane winds are known to cause the highest surges.<sup>14</sup> All eastern and Gulf coasts of the United States are vulnerable to storm surge. These potentially affected coastal regions are home to more than 30 million Americans,<sup>15</sup> and include the entire peninsula of Florida.<sup>16</sup>

Because storm surges cause the most fatalities during hurricanes, they are a topic of grave concern for all coastal communities.<sup>17</sup> Entire neighborhoods have been leveled in their wake, with death tolls in the thousands. Two recent examples of storm surge include Hurricane Katrina in Louisiana, where surges reached twenty-eight feet<sup>18</sup>, and Hurricane Sandy, in New York, which carried a record-breaking thirty-two-foot surge.<sup>19</sup> As storm surges continue to increase, they will also worsen flood damage in coastal zones and adjoining low-lying areas.<sup>20</sup> Stronger winds and

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9. See NAT'L WEATHER SERV., NAT'L OCEANIC & ATMOSPHERIC ADMIN., INTRODUCTION TO STORM SURGE 1, [http://www.nws.noaa.gov/om/hurricane/resources/surge\\_intro.pdf](http://www.nws.noaa.gov/om/hurricane/resources/surge_intro.pdf) [hereinafter *Introduction*].

10. *Id.*

11. *Id.* at 2.

12. *Id.*

13. *Id.*

14. *Id.*

15. *Id.* at 1; see also Doyle Rice, *Deadliest Hurricane Risk is Not Wind, But Water*, USA TODAY (July 12, 2011), [http://usatoday30.usatoday.com/weather/hurricane/2011-07-11-hurricane-storm-surge-dangers\\_n.htm](http://usatoday30.usatoday.com/weather/hurricane/2011-07-11-hurricane-storm-surge-dangers_n.htm).

16. See generally NAT'L WEATHER SERV., NAT'L HURRICANE CTR., STORM SURGE OVERVIEW, <http://www.nhc.noaa.gov/surge/> (last visited Jan. 29, 2016).

17. See generally Rice, *supra* note 15.

18. *Introduction*, *supra* note 9, at 2.

19. See Simon Worrall, *Two Years After Hurricane Sandy Hit the U.S., What Lessons Can We Learn From the Deadly Storm?*, NAT'L GEOGRAPHIC: BOOK TALK (Oct. 18, 2014), <http://news.nationalgeographic.com/news/2014/10/141019-hurricane-sandy-katrina-coast-guard-hunters-ngbooktalk/>.

20. Dasgupta, *supra* note 2, at 1.

larger onshore waves will similarly contribute towards a greater destructive impact.<sup>21</sup>

## 1. Factors Influencing Storm Surge

Various factors influence storm surge production, which contribute to the severity of surges. The National Weather Service, National Oceanic and Atmospheric Administration have listed the following characteristics as direct contributors to the amount of surge a given storm produces: (1) low central pressure, (2) intense storm winds, (3) fast forward speeds, (4) the width and slope of the ocean floor, (5) the angle by which a storm approaches a coastline, (6) the shape of the coastline, (7) the size of the storm approaching the coast, and local features, and (8) barriers that affect the flow of water.<sup>22</sup> Despite instruments being available to observe and measure storm surge such as tide stations, high water marks, and pressure sensors, these tools often fail during storms, and are difficult to rely on since recorded data has a high level of unknown error characteristics.<sup>23</sup>

## 2. The Effect of Climate Change on Storm Surges

Climate change has a direct influence on tropical cyclones.<sup>24</sup> The effects of such influence are becoming apparent via increased atmospheric moisture build-up, and post El Niño events, altering upper level winds.<sup>25</sup> However, sea level rise and warmer ocean temperatures will likely intensify storm surges the most.<sup>26</sup>

Sea level rise is caused by the thermal expansion of seawater and ice cap melting. Thermal expansion occurs when seawater becomes less dense and expands as it warms.<sup>27</sup> Ever since Hurricane Sandy, there has been a noticeable shift in climate change discussion from sea level rise to storm surge. Both sea level rise, as well as storm surge events, when compounded with global warming's increased temperatures, can cause weaker hurricanes to

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21. Dasgupta, *supra* note 2, at 1.

22. *Introduction*, *supra* note 9, at 4.

23. *Introduction*, *supra* note 9, at 5.

24. Tropical cyclones occur when rotating, organized cloud systems with low-pressure centers form over tropical waters. Depending on its location and strength, a tropical cyclone is generally classified as a tropical storm or hurricane. *See Tropical Cyclone Climatology*, NAT'L WEATHER SERV., NAT'L HURRICANE CTR., <http://www.nhc.noaa.gov/climo/> (last visited Jan. 29, 2016).

25. *See generally Introduction*, *supra* note 9.

26. *See* Simon Donner, *Storm Surges, Sea Level and Climate Change*, MARIBO (Nov. 8, 2012), <http://simondonner.blogspot.com/2012/11/storm-surges-sea-level-and-climate.html>.

27. *Id.*

be more damaging, which alters the overall strength of storms.<sup>28</sup> In 2006, the World Meteorological Organization reported that there would be a direct relation between an increase in sea level rise and the vulnerability of tropical storm surge flooding.<sup>29</sup> Since then, the science behind cyclone activity is gradually becoming more conclusive.<sup>30</sup>

In addition to local sea level rise, warmer ocean temperatures are likely to cause more intense cyclones, which in turn will heighten storm surges.<sup>31</sup> Scientists Aslak Grimsted, John C. Moore, and Svetlana Jevrejeva conducted a 2013 study that projected the Atlantic hurricane surge threat from rising ocean temperatures.<sup>32</sup> The study estimated that for every 1.8 degree Fahrenheit increase in global average surface temperatures, there could be a two to seven-fold increase in the risk of Katrina-magnitude surge events.<sup>33</sup>

To reach this number, Grimsted used historical records of storm surge events from six tide gauges,<sup>34</sup> and compared the surge record changes with theorized influences, such as global temperature changes, regional sea surface temperatures changes, and sources of natural climate variability, such as El Niño or La Niña events.<sup>35</sup> Regional sea surface temperatures and global average surface temperatures were found to best match the tide gauge records, which in turn suggests that increases in warmer climates, even at a minimal scale, cause extreme increases in surge activity.<sup>36</sup> In an article discussing the study, Grimsted noted that the findings are relevant because they suggest

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28. See Andrew Freedman, *Storm Surge Risk Amplified by Climate Change, Study Finds*, HUFFINGTON POST (June 24, 2013, 4:17PM), [http://www.huffingtonpost.com/2013/03/18/storm-surge-risk\\_n\\_2902823.html](http://www.huffingtonpost.com/2013/03/18/storm-surge-risk_n_2902823.html) [hereinafter *Storm Surge Risk*]; see also Kerry Emanuel, *Increasing Destructiveness of Tropical Cyclones Over the Past 30 Years*, 436 NATURE 686, 688 (2005).

29. Dasgupta, *supra* note 2, at 2.

30. The Intergovernmental Panel on Climate Change, (IPCC) 2014 Synthesis report confirms there is very high confidence that impacts from recent climate-related extremes, such as floods and cyclones, reveal significant vulnerability and exposure of some ecosystems and many human systems to current climate variability. However, despite the existing connection between sea level rise and storm surge flooding, it has yet to become an established trend. See INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2014: SYNTHESIS REPORT 55 (2014), [http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR\\_AR5\\_LONGERREPORT.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_LONGERREPORT.pdf); see also P.J. Webster, et al., *Changes in Tropical Cyclone Number, Duration, and Intensity in a Warming Environment*, 309 SCIENCE 1844 (2005).

31. Dasgupta, *supra* note 2, at 1.

32. See Aslak Grimsted, et al., *Projected Atlantic Hurricane Surge Threat From Rising Temperatures*, 110 PROC. NAT'L ACAD. SCI. 5369, 5371 (2013).

33. *Id.*

34. Tide gauges measure the variation in water level along the coast, and are traditionally the most reliable way of measuring surge. See *Introduction*, *supra* note 9, at 5.

35. *Storm Surge Risk*, *supra* note 28.

36. Grimsted, *supra* note 32.

that, “coastal adaptation measures should include changes in surge statistics in addition to local sea level rise.”<sup>37</sup>

However, according to Geography professor Simon Donner<sup>38</sup> at the University of British Columbia, “there’s a non-linear relationship between surge height and the ‘run-up’: how far the water runs up on to the land.”<sup>39</sup> Donner believes that “increases in surge height can have a disproportionate effect on the distance water travels inland and the erosive power it yields.”<sup>40</sup> Shoreline profiles and the types of ground or sediment lining the coasts should be taken into consideration as well.

### *B. Impending Coastal Doom*

The need for greater disaster preparedness in areas vulnerable to storm surge is apparent, not just in the United States, but worldwide.<sup>41</sup> Despite recent efforts, storm-surge losses continue to occur in many coastal areas.<sup>42</sup> About 2.6 million people worldwide have drowned during surge events over the past 200 years.<sup>43</sup>

#### 1. Surge Vulnerability

Not only is human life at risk, but also devastating property loss via coastal inundation, or the flooding of normally dry, low-lying coastal lands.<sup>44</sup> Coastal flooding can reach far distances inland, sometimes as much as ten or more miles from the shore.<sup>45</sup> As expected, varying levels of storm surges carry with them varying levels of effect on coastal flooding.<sup>46</sup>

Typically, surges fit into one of three classifications: peak, “fore-runner,” and “post-runner” surges.<sup>47</sup> Peak surges occur at the landfall of a storm along an open coastline.<sup>48</sup> “Fore-runner” surges

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37. *Storm Surge Risk*, *supra* note 28 (emphasis added).

38. Simon Donner studies why the climate matters to people and the environment and publishes a blog, where he discusses many of his findings. See SIMON DONNER, CLIMATE MATTERS, <http://ibis.geog.ubc.ca/~sdonner/>.

39. Donner, *supra* note 26.

40. *Id.*

41. Dasgupta, *supra* note 2.

42. *Id.*

43. *Id.* at 1.

44. Coastal inundation is caused by severe weather events, such as storm surges along coasts, estuaries, and adjoining rivers. See *Storm Surge and Coastal Inundation*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., <http://www.stormsurge.noaa.gov> (last visited Jan. 29, 2014).

45. See HURRICANES: SCIENCE & SOC’Y, HURRICANE IMPACTS DUE TO STORM SURGE, WAVE, AND COASTAL FLOODING <http://www.hurricanesience.org/society/impacts/stormsurge/> (last visited Jan. 29, 2016) [hereinafter *Hurricane Impacts*].

46. *Id.*

47. *Id.*

48. *Id.*

are larger, and have also been found to occur hours before hurricane landfall.<sup>49</sup> As the name may suggest, “post-runner” surges occur after hurricane landfall.<sup>50</sup> Because of their design and timing, fore-runner and post-runner surges that are known for causing unexpected flooding carry the most potential for damaging property and life located further inland.<sup>51</sup>

Population density and economic productivity in coastal zones also serve as factors susceptible to surge vulnerability.<sup>52</sup> Twenty-three of the twenty-five most densely populated counties in the United States are located on the coast, and much of these densely populated coastlines are less than ten feet above the mean sea level.<sup>53</sup> For example, Rhode Island, Delaware, and Hawaii are three states in which their entire population is located in coastline counties.<sup>54</sup> Population density has increased by 32% in Gulf coastal counties, 17% in Atlantic coastal counties, and 16% in Hawaii, between 1990 and 2008.<sup>55</sup> Now, over half of the nation’s economic productivity is located within coastal zones.<sup>56</sup> In the Gulf Coast Region alone, 72% of ports, 27% of major roads, and 9% of rail lines are at or below a four-foot elevation.<sup>57</sup> This means that a storm surge of 23 feet could inundate 67% of interstates, 57% of arterials, and almost half of all rail miles, as well as twenty-nine airports.<sup>58</sup> Coastal civilizations must take precaution. If the rate of sea level rise increases in the next fifty years, the results can and will be catastrophic.<sup>59</sup>

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49. *Hurricane Impacts*, *supra* note 45.

50. *Id.*

51. *Id.*

52. Dasgupta, *supra* note 2.

53. See NAT’L WEATHER SERV., NAT’L HURRICANE CTR., SURGE VULNERABILITY FACTS, <http://www.nhc.noaa.gov/surge/#FACTS> (last visited Jan. 29, 2016) [hereinafter *Vulnerability Facts*]; see also Wendy Koch, *Dunes, Reefs Protect U.S. Coasts from Climate Change*, USA TODAY (July 14, 2013, 5:19 PM) <http://www.usatoday.com/story/news/nation/2013/07/14/dunes-reefs-protect-us-coastlines-from-climate-change-storms/2513299/>.

54. See U.S. CENSUS BUREAU, COASTLINE POPULATION TRENDS IN THE U.S.: 1960 TO 2008 (May 2010), <http://www.census.gov/prod/2010pubs/p25-1139.pdf>.

55. *Id.*

56. *Vulnerability Facts*, *supra* note 53.

57. *Coastline Population Trends*, *supra* note 54.

58. *Id.*

59. See COASTAL CARE, SEA LEVEL RISE, <http://coastalcare.org/sections/inform/sea-level-rise/> (last visited Jan. 29, 2016).

### III. RESPONDING TO COASTAL CLIMATE CHANGE: MITIGATION AGAINST STORM SURGES

Because so many Americans reside within 50 miles of the coast, it is within the national interest to encourage mitigation of the potential dangers in our environment.<sup>60</sup> Local governments in coastal states must step in and address the national problem. At-risk state municipalities can create sustainable coastal communities by implementing a broad range of mitigation techniques.

#### A. “Armoring” the Coasts with Sand Dune Protections

Thomas O. Herrington, writing on behalf of New Jersey’s Sea Grant Coastal Processes Program, has published a Manual for Coastal Hazard Mitigation (MCHM), which “introduces the concept of coastal hazard mitigation through community and individual preparedness” and “provides information for implementing effective hazard reduction efforts.”<sup>61</sup> Herrington’s article provides detailed analysis and explanation of various mitigation strategies as well as their required levels of effort for New Jersey to follow.<sup>62</sup> However, Herrington’s findings also serve as an excellent outline from which coastal communities everywhere can benefit from.

Herrington’s data is broken down into three categories: hazard mitigation, risk assessment, and coastal hazards.<sup>63</sup> Specifically, he proposes nine broad categories of mitigation practices: beach nourishment, coastal regulation, building elevation, siting, shore protection structures, coastal resource management, natural resource restoration, building techniques and community maintenance and preparedness.<sup>64</sup>

Beach restoration and nourishment are listed first as mitigation for long and short-term erosion, flood hazards, and wave hazards.<sup>65</sup> Despite its high cost, beach nourishment is valuable to all aspects of coastal maintenance and serves as an integral building block for future coastal management.<sup>66</sup> An essential aspect of beach

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60. See Thomas O. Herrington, *Manual for Coastal Hazard Mitigation*, N.J. SEA GRANT COLLEGE PROGRAM 9, [www.state.nj.us/dep/cmp/coastal\\_hazard\\_manual.pdf](http://www.state.nj.us/dep/cmp/coastal_hazard_manual.pdf).

61. *Id.* at 4.

62. *Id.*

63. *Id.*

64. *Id.*

65. *Id.* at 44.

66. *Id.*

nourishment is the maintenance of improved and naturally existing sand dunes.<sup>67</sup> As it stands, coastal dunes can be found along the shores of Maryland, Florida, Massachusetts, North Carolina, New York, Texas, and Michigan.<sup>68</sup> Some of these dunes are located within the National Park Service System, which affords them protection.<sup>69</sup> However, for the remaining majority of coastal dunes, it is up to the state municipalities to provide their own nourishment.<sup>70</sup>

## 1. Sand Dune Formations and Growth

Natural sand dunes are widely considered to be protective treasures.<sup>71</sup> Vegetated, healthy, natural dunes are most capable of blocking storm surge.<sup>72</sup> They are the first line of defense against hurricanes and beach erosion. Their roots hold sand in place, and absorb the impact of storm surge while fortifying the area around them. In doing so, sand dunes prevent or delay the flooding of inland structures.<sup>73</sup>

Additionally, sand dunes provide shelter and resources to plants and animals living on the shore that are otherwise exposed to the harsh environment of shifting, infertile sands, salt sprays, and direct sunlight and storms.<sup>74</sup> Various animals depend on sand dunes, such as burrow dwelling beach mice, coach-whip snakes, ghost crabs, nesting sea turtles, least terns<sup>75</sup>, piping, and snowy plovers<sup>76</sup>, ground doves, and migrating monarch butterflies.<sup>77</sup> Not only do sand dunes protect our homes, businesses, plants and animals, but they also enhance the quality of life in states like Florida whose economy depends on tourism, which in turn depends

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67. *Id.* at 41.

68. See U.S. GEOLOGICAL SURVEY: COASTAL DUNES, <http://geomaps.wr.usgs.gov/parks/dune/cdune.html> (last visited Jan. 29, 2016) [hereinafter *Coastal Dunes*].

69. *Coastal Dunes*, *supra* note 68.

70. *Id.*

71. Samuel Brody, a professor in marine sciences and urban planning at Texas A&M University, is well known for his promotion of natural sand dunes and naturally occurring wetlands. See Samuel D. Brody, et al., *Examining the Influence of Development Patterns on Flood Damages Along the Gulf of Mexico*, 50 URBAN STUDIES 789-806 (2013), <http://jpe.sagepub.com/content/31/4/438.abstract>. See also Nuwer, *supra* note 5.

72. See Nuwer, *supra* note 5.

73. *Dune Protection*, *supra* note 4.

74. *Building Back*, *supra* note 4, at 2.

75. A Least Tern is the smallest species of American Terns, or seabirds found along the Southern coasts of the United States. See *Least Tern*, THE CORNELL LAB OF ORNITHOLOGY, ALL ABOUT BIRDS, [http://www.allaboutbirds.org/guide/Least\\_Tern/lifehistory](http://www.allaboutbirds.org/guide/Least_Tern/lifehistory) (last visited Jan. 19, 2015).

76. Piping and snowy plovers are among the rarest and most threatened beach nesting birds. Plovers are known to nest directly on the beach, by laying their eggs in shallow sand depressions. See *Beach Nesting Bird Project*, CONSERVE WILDLIFE FOUNDATION OF NEW JERSEY, <http://www.conservewildlifenj.org/protecting/projects/beachnestingbird/> (last visited Jan. 19, 2015).

77. *Building Back*, *supra* note 4, at 2.

on healthy beaches.<sup>78</sup> Additionally, sand dunes are an integral component of a barrier island system.<sup>79</sup>

The only problem with sand dunes, as per Professor Samuel Brody of Texas A&M University, is that once naturally occurring dunes are taken away, they can't be easily recreated.<sup>80</sup> Because sand dunes are basically piles of wind-blown sand, their composition depends on many factors including the amount of sand available on any given beach, the size of the sand, and prevailing wind directions.<sup>81</sup> With these shifting variables, dunes can grow or shrink based on wind speeds alone.<sup>82</sup> Sand dunes can also be created and destroyed by either humans or nature; one giant storm can wash away an entire dune area. For purposes of this paper, it is important to distinguish between natural and man-made dune systems, as both have a large impact on coastal, beachfront property owners.

Natural sand dune systems form when sand starts to pile up around accumulations of beach debris, such as piles of seaweed, clumps of salt marsh straw, or human refuse.<sup>83</sup> The debris slows down shore winds, blocking it and causing sand to accumulate in the wind's "shadow" of the object.<sup>84</sup> Eventually, dune grass seeds, or sea oats, find their way over to the sand piles, germinate, sprout, and trap more sand.<sup>85</sup> The rotting vegetation underneath provides nutrients, which helps the seedlings survive.<sup>86</sup> As growth continues, more sand accumulates and new dunes are born.<sup>87</sup> Mentioned *supra*, natural shorelines are valuable because they are perfectly engineered to protect against erosion.<sup>88</sup> The deep-rooted plants provide structural integrity, which prevents the land from breaking apart.<sup>89</sup>

Man-made dune systems are generally constructed by bulldozing, which pushes piles of sand up and back onto beaches.<sup>90</sup> Because these dunes lack all characteristics of a natural dune, they

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78. *Id.*

79. Barrier islands are naturally occurring, long accumulations of sand, separate from the mainland. *See generally* William Birkemeier, et al., *The Evolution of a Barrier Island: 1930-19080*, 52 J. OF THE AM. SHORE & BEACH PRES. ASS'N. 2, 2-12 (1984), [http://www.frf.usace.army.mil/aerial1930/pdf/evolution\\_of\\_a\\_barrier\\_island.pdf](http://www.frf.usace.army.mil/aerial1930/pdf/evolution_of_a_barrier_island.pdf).

80. *See* Nuwer, *supra* note 5.

81. *See* SEA SAND DUNES, COASTAL CARE, <http://coastalcare.org/educate/sand-dunes/> (last visited Feb. 7, 2016).

82. *Id.*

83. *Id.*

84. *Id.*

85. *Id.*

86. *Id.*

87. *See* SEA SAND DUNES, COASTAL CARE, <http://coastalcare.org/educate/sand-dunes/> (last visited Feb. 7, 2016).

88. *See* N.Y. STATE, DEPT OF ENVTL CONSERVATION, SHORELINE STABILIZATION TECHNIQUES (July 2010), <http://www.dec.ny.gov/permits/67096.html>.

89. *Id.*

90. SEA SAND DUNES, *supra* note 81.



often contain a lot of shell material and finer, looser sands, which erode much quicker. There are no roots in place, and therefore man-made dunes are less stable. For these reasons among others, bulldozing sand to create artificial dune systems is not a healthy solution for stabilizing beaches.<sup>91</sup>

## 2. Rebuilding Sand Dunes

Natural sand dunes, though structurally instrumental on coastal fronts, are easily susceptible to change and destruction via tropical storms and winds. Coastal municipalities must be educated on how to rebuild them once they are destroyed. The Florida Department of Environmental Protection, Bureau of Beaches, and Coastal Systems has teamed up with the U.S. Fish and Wildlife Service in publishing an article titled *Building Back the Sand Dunes*.<sup>92</sup> According to their findings, there are two main ways municipalities can assist with the rebuilding of sand dunes: dune planting and sand fencing. Dune planting involves planting native coastal plants such as sea oats, so their roots and stems can help trap sand as the dunes build.<sup>93</sup> Other vegetation, such as bitter panicum, can be planted around the sea oats, and sand fences can be installed to help protect the seedlings as well.<sup>94</sup> Planting is most effective in the early fall or spring, so that minimal watering is required.<sup>95</sup> Depending on rainfall, planting during other times of year can be dangerous.<sup>96</sup>

Sand fences are generally made of wood, or biodegradable plastic materials and help build up sand dunes by trapping and collecting wind driven sand.<sup>97</sup> To encourage dune growth, fences must be raised before sand accumulates to a depth of eighteen inches. Once a fence becomes buried, it will no longer serve its purpose.<sup>98</sup> There are certain places sand fencing may be restricted: the Southeast coast, because of marine turtle nesting, as well as in the barrier islands, where the dry beach area may not be wide enough to supply the necessary amounts of wind driven sand.<sup>99</sup> In Florida, the Department of Environmental Protection as well as local governments require permits for installing sand fences,

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91. *Id.*

92. *See Building Back*, *supra* note 4.

93. *Id.* at 1.

94. *Id.*

95. *Id.* at 2.

96. *Id.*

97. *Id.*

98. *Id.*

99. *Id.* at 3.

constructing dune walkovers, and dune plantings; but still encourage the building back of sand dunes.<sup>100</sup>

### 3. The Need for Adaptation, Not Alteration

The more our global temperature rises as a symptom of climate change, the higher the ocean waters climb and the more susceptible coastal communities become to storm surges and flooding. Beach restoration efforts must be undertaken, with specific emphasis on protective measures like sand dune fortification, not coastal armoring.<sup>101</sup> However, the sheer presence of dunes should not create a false sense of security for developers to continue building along the Gulf Coasts, or homeowners who do not invest in additional protective measures.<sup>102</sup> Dr. Orrin H. Pilkey, a James B. Duke Professor Emeritus of Earth and Sciences at Duke University, recommends starting with a more grim approach.<sup>103</sup> He believes municipalities should assume upfront that sand dunes will be breached, and that therefore, the proper combination for coastal protection lies in a combination of both beach restoration and human development and planning.<sup>104</sup> Currently, these efforts continue to rely on strong local ordinances.

#### *B. Adaptation, Mitigation, & Climate Change Policy*

Generally, climate change responses have been categorized into three classifications: adaptation, mitigation, and geoengineering.<sup>105</sup> Of the three, adaptation is the most widely used response to coastal climate change because it involves simply responding to the negative impacts caused by climate change.<sup>106</sup> Mitigation comes in a close second, involving the construction and adoption of policies that would avoid climate change in the first place.<sup>107</sup>

Because adaption measures do not require collective decisions, and people can decide for themselves how they want to initiate a

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100. *Id.* at 1.

101. The Netherlands is in the lead with preserving and restoring dunes: it has recently added 32-foot high dunes along a 13-mile stretch of beach in The Hague. Upon completion, the dunes will add an additional 65 feet to the beach. *See* Nuwer, *supra* note 5. Shoreline armoring is bad for the structural integrity of beaches, and has been outlawed in North Carolina. *See* SHORELINE ARMORING, COASTAL CARE, <http://coastalcare.org/sections/inform/shoreline-armoring/> (last visited Feb. 7, 2016).

102. Nuwer, *supra* note 5.

103. *Id.*

104. *Id.*

105. ANDREW E. DESSLER, INTRODUCTION TO MODERN CLIMATE CHANGE 165 (2012).

106. *Id.* at 165-66.

107. *Id.* at 165.

response, local governments have relied heavily on adaptation.<sup>108</sup> But adaptation measures should not be confused with alteration or armoring methods.<sup>109</sup>

Armoring utilizes physical structures to protect shorelines from coastal erosion.<sup>110</sup> This technique differs from adaptation, because instead of adapting the actual environment to best protect against coastal erosion through fortification processes such as sand dunes, armoring simply builds objects on top of the environment to shield it against coastal erosion. Sometimes referred to as shoreline stabilization, armoring includes alteration techniques that adjust natural or human systems, and are therefore known for causing more problems than they solve. Common shoreline alternations include: building bulkheads, retaining walls, and permanent docks; the creation of artificial sand beaches; and planting lawns via the use of lawn chemicals.<sup>111</sup> Armoring has ultimately lead to “increased erosion, structural damage, and the destruction of the shoreline ecosystem.”<sup>112</sup>

In the face of harsh, negative stabilization techniques, beach nourishment and the fortification of sand dunes are usually the favored, least abrasive alternative.<sup>113</sup> Adaptation measures benefit local communities and individuals because it allows them to take issues into their own hands, in the absence of federal government regulation.<sup>114</sup>

However, issues arise here because nourishment costs are usually paid by taxpayers, but often only benefit the private oceanfront buildings.<sup>115</sup> Because of this, the taxpaying public has been refused access to beaches they have paid to protect.<sup>116</sup> Additionally, pushing adaptation to the local level limits what adaptation measures can be undertaken because many strategies are too expensive for local governments to undertake without

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108. *Id.*

109. Shoreline armoring is “the construction of seawalls, jetties, offshore breakwaters and groins intended to hold shorelines in place.” SHORELINE ARMORING, *supra* note 101.

110. See NAT’L OCEAN SERVICE, NAT’L OCEANIC & ATMOSPHERIC ADMIN., WHAT IS SHORELINE ARMORING?, <http://oceanservice.noaa.gov/facts/shoreline-armoring.html> (last visited Oct. 5, 2015).

111. See *Shoreline Stabilization Techniques*, *supra* note 79; see also VT. NW. REG’L PLANNING COMM’N, THE SHORELINE STABILIZATION HANDBOOK 13-14, <http://www.uvm.edu/seagrant/sites/default/files/uploads/publication/shorelinestabiliationhandbook.pdf>.

112. See *Shoreline Stabilization Techniques*, *supra* note 88.

113. See Howard Marlowe, *Beach Nourishment: A Guide for Local Government Officials*, <http://coast.noaa.gov/archived/beachnourishment/html/human/dialog/series2a.htm> (last visited Feb. 7, 2016).

114. DESSLER, *supra* note 105, at 167.

115. Marlowe, *supra* note 113.

116. See SHORELINE STRUCTURES, [http://www.beachapedia.org/Shoreline\\_Structures](http://www.beachapedia.org/Shoreline_Structures) (last visited Feb. 7, 2016).

help.<sup>117</sup> Critics, such as author Andrew E. Dessler, believe the level of impact of climate change has on an area is a direct reflection on how wealthy the area is to begin with.<sup>118</sup> The rest of this paper will focus on prescribing a way to disprove this policy theory at the local government level.

*C. Local Government's Responses  
& The Issue of Free Riding*

For years, environmental legal advisors have argued for greater state commitment to environmental protection. As Lynda L. Butler recommends in her article titled *State Environmental Programs: A Study in Political Influence and Regulatory Failure*, states should “adopt standards and restrictions to govern the use of natural resources and the development of comprehensive plans for certain critical resources.”<sup>119</sup> While some states like Hawaii, Massachusetts, Maine, Delaware, South Carolina, and California have implemented aggressive environmental programs, some states, such as Louisiana and Florida, have not.<sup>120</sup> This inaction directly conflicts with scientific knowledge and understanding of climate change today.<sup>121</sup> Local government action is therefore often restricted due to the state and its delegation structure. For example, local governments in Dillon’s Rule states can only exercise powers expressly conferred or implicated.<sup>122</sup> In state’s run by Dillon’s rule, the “state legislature controls the local government structure, which often includes managing its procedures, activity financing, and individual authority to undertake functions.”<sup>123</sup> Dillon’s Rule states generally have stricter state control of local governments via judicial supervision to avoid local government risks. These states are wary of local government regulation, and often view municipal structures as too fragmented to allow effective guidance.<sup>124</sup> Despite varying views, improvements on the local level need to occur. Critic Lynda Butler notes in her 1990 article, mentioned above, a more uniform

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117. DESSLER, *supra* note 105, at 167.

118. DESSLER, *supra* note 105, at 167.

119. Lynda L. Butler, *State Environmental Programs: A Study in Political Influence and Regulatory Failure*, 31 WM. & MARY L. REV. 823, 824 (1990).

120. See Lauren Campbell, *Climate Change Adaptation*, [http://www.beachapedia.org/Climate\\_Change\\_Adaptation](http://www.beachapedia.org/Climate_Change_Adaptation) (last visited Feb. 7, 2016).

121. See generally IPCC, *supra* note 30.

122. Butler, *supra* note 119, at 875.

123. See NAT’L LEAGUE OF CITIES, LOCAL GOVERNMENT AUTHORITY, <http://www.nlc.org/build-skills-and-networks/resources/cities-101/city-powers/local-government-authority> (last visited Feb. 7, 2016).

124. Butler, *supra* note 119, at 923.

system of local regulatory powers is abundantly necessary to “permit regional cooperation and achieve desired results.”<sup>125</sup>

## 1. Local Government Regulation (CZMA)

Coastal regulation started with the Coastal Zone Management Act (CZMA) in 1972, which created incentives for states and local governments:

[T]o encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of . . . the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and esthetic values as well as the needs for compatible economic development . . . programs . . .<sup>126</sup>

The Act has been helpful in organizing comprehensive planning and “establish[ing] coastal protection laws and state coastal zone management programs.”<sup>127</sup> Coastal management programs, such as the California Coastal Commission and the North Carolina Division of Coastal management, allow local communities to develop local coastal plans that reduce hazards resulting from erosion.<sup>128</sup> However, many of these plans were established long before climate change became prevalent, and consequently do not address relevant adaptation or mitigation efforts. As a result, Beachapedia, an online coastal knowledge resource, notes “coastal zone management programs tend to lack the necessary resources to properly defend coastal zones from the developmental pressures placed on them today.”<sup>129</sup>

## 2. “Suckers” & “Free Riders”

In the void of success behind coastal management program implementation, local governments have been facing additional issues between “suckers” and “free riding” communities.

As per scientists at the University of North Carolina at Wilmington, “suckers” are the coastal towns that are currently

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125. *Id.* at 928.

126. 16 U.S.C. § 1452 (2015); see OFFICE FOR COASTAL MGMT., NAT’L OCEANIC & ATMOSPHERIC ADMIN., COASTAL ZONE MANAGEMENT ACT, <http://coast.noaa.gov/czm/act/?redirect=301ocm> (last visited Feb. 7, 2016).

127. See COASTAL ZONE MANAGEMENT ACT, [http://www.beachapedia.org/Coastal\\_Zone\\_Management\\_Act](http://www.beachapedia.org/Coastal_Zone_Management_Act) (last visited Feb. 7, 2016).

128. *Id.*

129. *Id.*

spending millions of dollars toward the re-nourishment of eroded beaches.<sup>130</sup> Nearby towns that spend minimal to no money on re-nourishment are known as “free-riders.”<sup>131</sup> Free-riding towns are receiving nourished sand from the “suckers” who are supplying them, and treating them as crutches in the process.<sup>132</sup> Typically, towns paying for the new sand and nourishment begin to see improvements on their beaches and therefore continue to bring in more sand. As a consequence, neighboring free-riding towns start to see their erosion mitigated and become less inclined to spend their own money on additional efforts, because they are already receiving the benefits of the process for free.<sup>133</sup> A computer model created by Zach Williams of UNC-Wilmington, along with scientists from Duke and Ohio State Universities, shows that suckers will eventually pass a point of lessened return where they are spending more money and creating less improvement, which eventually leads to lowered property values in coastal communities.<sup>134</sup>

Once again, the issue circles back to politics and money. Not all communities are equal; some towns have more money to pay toward nourishment than others. Unfortunately, politics such as these become the deciding factor behind which beaches become re-nourished and which do not.<sup>135</sup>

### 3. Managed Retreat

A third prescribed method for local governments to combat coastal erosion and disappearing coastlines is managed or planned retreat. This option recommends moving homes and businesses away from the shore to allow natural ocean processes to run their course.<sup>136</sup> Under managed retreat programs, municipalities focus on business and homeowner relocation, which in turn relies on buyout

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130. See Zachary C. Williams, et al., *Coupled Economic-Coastline Modeling with Suckers and Free Riders*, 118 J. OF GEOPHYSICAL RES.: EARTH SURFACE 887 (2013), [http://www.readcube.com/articles/10.1002%2Fjgrf.20066?r3\\_referer=wol&show\\_checkout=1](http://www.readcube.com/articles/10.1002%2Fjgrf.20066?r3_referer=wol&show_checkout=1). See also Joel N. Shurkin, *When ‘Suckers’ Rebuild Eroding Beaches, ‘Free Riders’ Benefit*, INSIDE SCIENCE (May 8, 2013), <http://www.insidescience.org/content/when-suckers-rebuild-eroding-beaches-free-riders-benefit/1002>.

131. *Id.* at 893.

132. See generally Shurkin, *supra* note 130.

133. *Id.*

134. *Id.* See also Williams, *supra* note 130.

135. See *Beachfront Nourishment Decisions*, *supra* note 6. See also Jared Anderson, *Energy Quote of the Day: On Climate Change Mitigation vs. Adaptation and Tragedy of the Commons*, BREAKING ENERGY (July 10, 2014) <http://breakingenergy.com/2014/07/10/energy-quote-of-the-day-on-climate-change-mitigation-vs-adaptation-and-tragedy-of-the-commons/> (for free riding on a global scale).

136. See MANAGED RETREAT, [http://beachapedia.org/Managed\\_Retreat](http://beachapedia.org/Managed_Retreat) (last visited Feb. 7, 2016).

programs.<sup>137</sup> Buyout programs are run by municipalities and provide incentives for relocation, assistance for down payments among low-income residents, and identify new areas of safe growth.<sup>138</sup> These programs typically start in repetitive loss areas and tend to be most effective if initiated immediately after a natural disaster.<sup>139</sup>

There are many cons associated with managed retreat, since it is often viewed as “giving up.” Most communities resort to managed retreat in highly erosive areas because it is thought to be less expensive than structural stabilization projects.<sup>140</sup> Unfortunately, it is a daunting task to implement both politically and financially, and can cause shorefront property values to decrease immensely.<sup>141</sup>

Attempting to stop coastal erosion is not a losing battle. Shoreline protection efforts and repeated maintenance must be implemented in a cost-effective manner to ultimately prevent further erosion.

#### IV. “SPECIALLY ASSESSING” A USER FEE SOLUTION

Local coastal communities must be developed to accommodate additional methods for coastal protection, utilizing a universal implementation system that avoids risk to suckers, free riders, and the prospect of managed retreat. Specifically, local governments should implement a special assessment, similar to that of Portland, Oregon’s proposed Transportation User Fee.<sup>142</sup> The coastal fee will require all coastal users such as homeowners and businesses to contribute a monthly payment to cover the costs of shoreline adaptation methods.<sup>143</sup> The fee will essentially be a charge to users of the city or town’s coastal infrastructure, based on estimates of use they generate.<sup>144</sup> Properties within a 100-mile radius of the shore will be charged, in varying degrees dependent on season.<sup>145</sup> Because

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137. See generally Anne Siders, *Managed Coastal Retreat, A Legal Handbook on Shifting Dev. Away from Vulnerable Areas*, COLUMB. CENTER FOR CLIMATE CHANGE L. at v (2013), available at [https://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Publications/Fellows/ManagedCoastalRetreat\\_FINAL\\_Oct%2030](https://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Publications/Fellows/ManagedCoastalRetreat_FINAL_Oct%2030).

138. Anne Siders, *supra* note 137.

139. *Id.*

140. See MANAGED RETREAT, *supra* note 136.

141. *Id.*

142. The City of Portland decided to seek more public input on ways to reduce charges for low-income residents and businesses, and provide discount for non-profits, altering and adapting the Transportation User Fee on November 10, 2014, into what is now known as the Portland Street Fund. See *News Release: Mayor Hales, Commissioner Novick Propose \$46 Million Portland Street Fund*, CITY OF PORTLAND, BUREAU OF TRANSP. <https://www.portlandoregon.gov/transportation/article/508979> (last viewed Dec. 12, 2014).

143. Barr, *supra* note 7.

144. See *Our Streets Transportation User Fee*, *supra* note 8.

145. *Id.*

these properties and users rely on the coast for business, and pleasure, they must all pay to keep that system safe and well maintained.<sup>146</sup> Inland and shorefront property owners will uniformly benefit by municipalities evenly splitting coastal adaptation measures between them.

### *A. Special Assessments and User Fees*

Special assessments and user fees are commonly given the same general classification, though they differ slightly. Special assessments are unique charges that local governments can assess against real estate parcels for certain public projects.<sup>147</sup> User fees are paid for a service provided, based directly on the value of the individual use or benefit.<sup>148</sup> Both are dues that a city or county can charge businesses and homeowners for utilities, road maintenance, and other services such as street lighting and fire protection.<sup>149</sup>

Despite their topical similarity, special assessments are not to be confused with taxes.<sup>150</sup> Taxes produce a general benefit to a community and no specific benefit to a person or particular area of land.<sup>151</sup> In contrast, special assessments can only be levied on land, and can only be imposed to pay the cost of improvement or service that the land will specially benefit.<sup>152</sup> Special assessments and user fees are therefore an important funding tool available to local governments.<sup>153</sup>

### *B. Portland, Oregon's Proposed Transportation User Fee Analogy & Comparison*

In recent years, special assessments have been used to fund solid waste management services, as well as transit investments.<sup>154</sup> Special assessments are surprisingly elastic; they can be applied to

146. *Id.*

147. See SPECIAL ASSESSMENT TAX, [http://en.wikipedia.org/wiki/Special\\_assessment\\_tax](http://en.wikipedia.org/wiki/Special_assessment_tax) (last visited Feb. 7, 2016).

148. *Id.*

149. See Roy F. Weston, *Local Government Guide to the Establishment of Solid Waste Special Assessments*, CARL VINSON INST. OF GOV'T, THE UNIV. OF GA., 1-2 (1995), <http://info.house.p2ric.org/ref/26/25021.pdf>.

150. See Mich. Mun. League, *Chapter 22: Special Assessments and User Charges*, HANDBOOK FOR GENERAL LAW VILL. OFFICIALS 105 (2006), <https://www.mml.org/pdf/glv/chapter22.pdf>

151. *Id.*

152. *Id.*

153. Weston, *supra* note 149 at 2-1.

154. See Rachel MacCleery & Casey Peterson, *Using Special Assessments to Fund Transit Investments*, URBANLAND, (Oct. 24, 2012), <http://urbanland.uli.org/infrastructure-transit/using-special-assessments-to-fund-transit-investments/>.



commercial or industrial properties, or stretched to include residential land uses as well. The fees charged can also change over time.<sup>155</sup> As Rachel MacCleery and Casey Peterson explain in their 2012 article, Using Special Assessments to Fund Transit Investments, “[s]pecial assessments for transit can be used to channel revenues from property tax rate increases to fund transit construction, operations, or related infrastructure improvements.”<sup>156</sup>

Earlier this year, Portland, Oregon proposed its own special assessment Transportation User Fee in an effort to pay for street maintenance and safety improvements.<sup>157</sup> As per Portland Mayor Charlie Hales, the city’s streets are in declining condition, and the User Fee is Portland’s way of attempting to do something about it.<sup>158</sup> Portland will be the 29th city in Oregon to adopt a similar transportation fee, which is why the Mayor feels as if the cost is not a radical imposition on city residents.<sup>159</sup> The City has acknowledged that street maintenance could not be addressed with the existing gas tax revenues alone.<sup>160</sup>

The pay structure was originally set up so that homeowners would pay a flat monthly fee of about \$11.56 per month, or \$140 per year.<sup>161</sup> A higher fee would be charged to businesses, depending on the amount of trips the particular property generates.<sup>162</sup> As per Max Barr, of KATU.com News, “churches, schools, and non-profit organizations would also need to pay.”<sup>163</sup> The fee is estimated to go into effect in July 2015 and will appear on all water and sewer bills. Portland Commissioner Steve Novick, estimates the new tax will raise about \$50 million per year.<sup>164</sup> The funds will go directly towards transportation and will focus on maintenance and safety with specific projects such as sidewalk and crosswalk creation and restoration.<sup>165</sup>

On November 10, 2014, the City of Portland adapted the proposed Transportation User Fee into what is now known as the Portland Street Fund. Because the city received backlash from citizens concerned about payments, the City Council decided to seek more public input on ways to reduce charges for low-income

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155. *Id.*

156. MacCleery & Peterson, *supra* note 154.

157. Barr, *supra* note 7.

158. *Id.*

159. *Id.*

160. *Id.*

161. *Id.*

162. *Id.*

163. Barr, *supra* note 7.

164. *Id.*

165. *Id.*

residents and businesses, and provide discount for non-profits.<sup>166</sup> Individuals will now pay rates related to their ability to pay.<sup>167</sup> Businesses will now pay between \$3 and \$144 a month, and will include a 50 percent discount for non-profits.<sup>168</sup>

The Portland Transportation User Fee example is analogous to a beach re-nourishment and fortification solution. Special assessments or user fees can provide local communities with a viable adaptation measure. Fees will only be imposed to pay the cost of improvement or services by which the assessed coastal land is specially benefitted. With the benefitting individuals and businesses each paying a fraction of the cost, more money can ultimately be collected and spent on U.S. coasts. Most importantly, local communities will be able to take the matter into their own hands, in the absence of federal government regulation.

## V. CONCLUSION

As the effects of climate change continue to manifest, the issues surrounding storm surge will only intensify. Low-lying regions in coastal zones will remain at risk to flooding and disaster unless coastal communities adapt. Local governments on the United States' coasts must act quickly to implement a new method of funding for fortification of our beaches. Special assessments and user fees are a feasible solution that rest well within the delegated local government powers. With special assessments in place, fees for beach re-nourishment and maintenance will be charged directly to users of a city or town's coastal infrastructure, based on estimates of the use they generate. Special assessment fees will eliminate the prospect of free riders benefitting from suckers, and prevent wealthier towns from having stronger coasts simply because they can afford it. Special assessment fees will allow for heightened promotion of the growth and maintenance of sand dunes, and will encourage more access to beaches by all who wish to benefit from them. Ultimately, local government special assessment coastal fees will provide communities with the resources to effectively combat the dangers of coastal climate change.

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166. See PORTLAND BUREAU OF TRANSP, BETTER STREETS, SAFER CITY: STREET REPAIR AND SAFETY PROGRAM, <https://www.portlandoregon.gov/transportation/64188> (last visited Feb. 7, 2016) [hereinafter BETTER STREETS].

167. *Id.*

168. *Id.*

**LET WILLY FREE HIMSELF:  
THE CASE FOR EXPANDING STANDING TO MARINE  
MAMMALS TO CHALLENGE REGULATIONS  
OF THE PUBLIC DISPLAY INDUSTRY**

IAN E. WALDICK\*

*The beauty of marine mammals holds a special place in the heart of many Americans. As such, the taking of marine mammals for public display is subject to many regulations: international and domestic, federal and state. The public display facilities themselves are also subject to regulations concerned with ensuring the well-being of the captive marine mammals. These standards, concerning the physical characteristics of the enclosures and the qualifications of employees who interact with the captive animals, are largely left to industry self-regulation. This is problematic because research has demonstrated the harm that can stem from inadequate conditions of captivity and under-qualified trainers. However, the public display industry has been reluctant to modify its standards and has exposed both the captive marine mammals and the trainers interacting with the animals to harm. This Note proposes ways in which these deficiencies should be addressed.*

*With regard to the captive mammals, there are very limited circumstances in which a lawsuit could be brought to challenge the inadequacy of the conditions of captivity, due largely to the modern standing doctrine in federal courts. As a solution, this Note recommends a modest expansion of standing doctrine, allowing captive marine mammals to bring suit (in an ex rel capacity and represented by interest groups) to challenge these inadequate conditions. Such an expansion would address courts' concerns about "opening up the floodgates" for unnecessary litigation by allowing only the "individuals" that are harmed, to wit: the captive marine mammals, to bring suit, rather than any individual that just felt strongly about the conditions of captivity, ensuring that the court is hearing a "case or controversy."*

*This Note proceeds in five parts. Part I provides necessary background information discussing the web of regulations that govern the marine mammal public display industry. Part II discusses the educational requirements for public display facilities, the husbandry practices, and the problems with industry self-*

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\* J.D. Candidate 2016, Florida State University College of Law. I would like to thank my friends and family for the support throughout the writing of this Note. I would also like to thank Professor Donna Christie for her thoughtful advice and guidance throughout the writing process. I would also like to thank Roger Rozanski for his enthusiastic input on the naming of this Note.

*regulation. Part III proposes ways in which the deficiencies in the regulations should be remedied. Part IV briefly discusses the modern standing doctrine and proposes a modest expansion that would allow captive marine mammals to bring suit in an ex rel capacity to challenge the conditions of their captivity. Part V briefly concludes.*

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## I. INTRODUCTION

Members of the United States public have enjoyed observing marine mammals in captivity for several decades; we have planned family vacations to see the killer whales at Sea World in Orlando, Florida,<sup>1</sup> surprised significant others with “swim with the dolphins” encounters at Dolphin Quest in Oahu, Hawaii,<sup>2</sup> and gone to the local aquarium for an afternoon to observe sea otters playing in their enclosures.<sup>3</sup> All of these interactions between humans and marine mammals have something in common – they involve marine mammals which fall under the public display exception to the various moratoriums on takings of marine mammals, and are governed by a common set of regulations, written and enforced as a collaborative effort by both professional organizations and regulatory agencies.

Within the last decade, several commentators, as well as interest groups and concerned members of the public, have raised

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1. *One Ocean*, SEA WORLD PARKS, [http://seaworldparks.com/en/seaworld-orlando/attractions/shows/one-ocean/?from=Top\\_Nav](http://seaworldparks.com/en/seaworld-orlando/attractions/shows/one-ocean/?from=Top_Nav) (last visited Apr. 16, 2016).

2. *Dolphin Encounter*, DOLPHIN QUEST, <https://dolphinquest.com/activities/dolphin-encounter/> (last visited Oct. 14, 2016).

3. *See, e.g., Sea Otters*, AUDUBON NATURE INST., <http://www.auduboninstitute.org/visit/audubon-aquarium-americas/highlights/sea-otters> (last visited Apr. 16, 2016).

questions as to the adequacy of this regulatory scheme, whether it is being meaningfully enforced and, if not, how to successfully challenge the conditions which are imposed upon these creatures, which Congress has noted are "in urgent need of protection."<sup>4</sup> If the regulations are inadequate and/or harmful to the marine mammals that are housed in captivity in public display facilities, is there someone who would be able to bring a legal challenge to the regulations under the Supreme Court's modern standing doctrine?

This Note will argue that the current regulatory regime governing captive marine mammals is inadequate and provide one potential solution. It will proceed as follows. Part I will provide background information setting forth the current international law, statutes, and regulatory agencies that govern marine mammals from their home in the wild to captivity. Part II will discuss the problems of industry self-regulation, and articulate why it is particularly troublesome in the context of regulating captive marine mammals. Part III will set forth a proposed solution to this regulatory problem. Finally, Part IV will briefly describe federal courts' narrowing of Article III standing doctrine and argue that, as a result of the reduction of individuals who can bring suit, marine mammals (in an *ex rel.* capacity) should be afforded standing to challenge the inadequacy, and lack of enforcement, of the relevant regulations.

## II. BACKGROUND

Marine mammals have been subject to significant regulation since 1946.<sup>5</sup> They are concurrently regulated by several different sources of law, including international treaties and domestic regulatory regimes. This section will discuss each in turn, providing necessary background information to set the scene for the regulatory problems considered in Part II, *infra*.

### A. *International Regulation*

The first noteworthy international regulation of marine mammals began with the passing of the International Convention for the Regulation of Whaling (ICRW or Convention).<sup>6</sup> This treaty was passed in 1946 and was subsequently adopted by eighty-eight

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4. H.R. REP. 92-707 (1972), *reprinted in* 1972 U.S.C.C.A.N. 4144, 4147-48.

5. *See infra* Part I.A.

6. International Convention for the Regulation of Whaling, Dec. 2, 1946, 62 Stat. 1716 (entered into force Nov. 10, 1948).

countries (excluding five countries that adopted the treaty but later chose to leave the agreement).<sup>7</sup> The treaty established an international body to regulate whaling and oversee compliance called the International Whaling Commission (IWC).<sup>8</sup> The IWC is composed of one representative from each country that is a party to the treaty with equal voting power for the purpose of passing resolutions.<sup>9</sup>

The IWC is charged with encouraging studies and investigations relating to whales and whaling, collecting and analyzing statistical information regarding the effects of whaling on whale populations, and studying and distributing information regarding methods of maintaining and increasing whale populations.<sup>10</sup> It also funds and coordinates international whale conservation efforts.<sup>11</sup> Most importantly, however, the IWC is charged with the task of amending the “Schedule,” a complex set of regulations contained within the ICRW.<sup>12</sup>

Under the ICRW, there is currently a moratorium on commercial taking of all whales.<sup>13</sup> This means that no nation which is a party to the Convention may take any whales for commercial purposes; but limited exceptions apply for research purposes.<sup>14</sup> Although this is surely a step forward for whale conservation, the IWC itself has no power to enforce the prohibitions contained in the Schedule.<sup>15</sup> Furthermore, amendments to the Schedule, such as the commercial whaling moratorium, are only binding on member-nations if they do not make timely objections to the amendment.<sup>16</sup> Accordingly, countries such as Iceland, Norway, and the Russian Federation are not currently bound by the moratorium.<sup>17</sup> It is also important to note that even attempts to enforce the purpose underlying the Schedule’s regulations in the courts of member-nations have previously been unsuccessful.<sup>18</sup>

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7. See *Membership and Contracting Governments*, INT’L WHALING COMM’N, <https://iwc.int/members> (last visited Apr. 16, 2015).

8. International Convention for the Regulation of Whaling, *supra* note 6, at Art. III.

9. *Id.*

10. *Id.* at Art. IV.

11. *History and Purpose*, INT’L WHALING COMM’N, <https://iwc.int/history-and-purpose> (last visited Apr. 16, 2016).

12. International Convention for the Regulation of Whaling, *supra* note 6, Art. V.

13. *Id.* at Schedule, ¶ 6.

14. *Id.*

15. See generally, *id.* at Art. IX.

16. *Id.* at Art. V.3

17. See *Catches Taken: Under Objection or Under Reservation*, INT’L WHALING COMM’N, [https://iwc.int/table\\_objection](https://iwc.int/table_objection) (last visited Apr. 16, 2016).

18. See, e.g., *Japan Whaling Ass’n v. Am. Cetacean Soc’y*, 478 U.S. 221 (1986).

Although the moratorium on commercial takings is currently in effect, member-nations may continue to take whales for purposes of scientific research or public display, so long as they comply with a permitting process.<sup>19</sup> The use of this permitting process has led to controversy, as the only three countries to continue taking whales under the guise of scientific research since 1987 have been Iceland, Norway, and Japan.<sup>20</sup> In the past decade Japan has been the only country to continue utilizing the scientific permit exception, and has annually taken between 400 and 1,200 whales annually pursuant to it.<sup>21</sup> In March 2014, the International Court of Justice condemned Japan's practice, finding that its use of scientific permits did not conform to its obligations under the ICRW.<sup>22</sup>

### *B. Domestic Regulation*

From the point of taking from the wild (which will not always be a prerequisite to obtaining a captive marine mammal) to the point of public display, the taking and holding in captivity of marine mammals is regulated by several sources of domestic law. This subsection will discuss the regulations imposed at various points in the captivity process by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act),<sup>23</sup> the Marine Mammal Protection Act (MMPA),<sup>24</sup> the Endangered Species Act (ESA),<sup>25</sup> and the Animal Welfare Act (AWA).<sup>26</sup> Along with describing the regulations imposed by these various statutes, this section will describe which administrative agencies are tasked with the enforcement of each act and assess the effectiveness of the agency action.

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19. International Convention for the Regulation of Whaling, *supra* note 6, at Schedule, ¶ 30.

20. *Catches Taken: Special Permit*, INT'L WHALING COMM'N, [https://iwc.int/table\\_permit](https://iwc.int/table_permit) (last visited Apr. 16, 2016). Iceland briefly left the ICWR, but returned in 2002, noting reservations to the moratorium. *Iceland*, INT'L WHALING COMM'N, <https://iwc.int/iceland> (last visited Apr. 16, 2016). Norway continues commercial whaling. *Norwegian Whaling – Based on a Balanced Ecosystem*, FISHERIES.NO, [http://www.fisheries.no/ecosystems-and-stocks/marine\\_stocks/mammals/whales/whaling/#.VSXIYdzF8Xx](http://www.fisheries.no/ecosystems-and-stocks/marine_stocks/mammals/whales/whaling/#.VSXIYdzF8Xx) (last visited Apr. 16, 2016).

21. *Catches Taken: Special Permit*, INT'L WHALING COMM'N, [https://iwc.int/table\\_permit](https://iwc.int/table_permit) (last visited Apr. 16, 2016).

22. *Whaling in the Antarctic (Austl. v. Japan: N.Z. Intervening)*, Judgment, 2014 I.C.J. 148 (Mar. 31, 2014), <http://www.icj-cij.org/docket/files/148/18136.pdf>.

23. 16 U.S.C. §§ 1801-91 (2012).

24. 16 U.S.C. §§ 1361-1423 (2012).

25. 16 U.S.C. §§ 1531-44 (2012).

26. 7 U.S.C. §§ 2131-59 (2012).



## 1. Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Act provides a regulatory scheme to govern fisheries that are contained within the jurisdiction of the United States, i.e., in the U.S. Exclusive Economic Zone (EEZ).<sup>27</sup> Although this law is generally concerned with the regulation of commercial and private fishing operations to ensure conservation of our fisheries,<sup>28</sup> it does generally govern living marine resources which are defined to include marine mammals.<sup>29</sup> This law does not significantly regulate the process of capturing marine mammals.<sup>30</sup> It does, however, provide measures to ensure that marine mammals are not incidentally harmed by the United States' fishing industry.<sup>31</sup> Within the context of regulating captive marine mammals, however, it is simply important to note the existence of this law and the narrow nature of its regulations.

## 2. Marine Mammal Protection Act

The MMPA regulates, among other things, the taking from the wild and import of marine mammals.<sup>32</sup> The 1981 amendments to the MMPA established a moratorium on the taking and import of marine mammals.<sup>33</sup> It did, however, provide exceptions to the moratorium for scientific research public display facilities.<sup>34</sup> Takings for scientific research or public display purposes may only be carried out pursuant to a permit.<sup>35</sup> These takings are regulated by, and permits issued by, the National Marine Fisheries Service (NMFS),<sup>36</sup> which is a branch of the National Oceanic and Atmospheric Administration (NOAA),<sup>37</sup> and the Fish and Wildlife Service (FWS),<sup>38</sup> which is a branch of the Department of the Interior.<sup>39</sup>

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27. 33 U.S.C. § 3507(4) (2012).

28. 16 U.S.C. § 1801(b) (2012).

29. 16 U.S.C. § 1826(h) (2012).

30. Instead, this process is governed by the MMPA, discussed *infra* Part I.B.2.

31. See, e.g., 16 U.S.C. § 1826(d) (2012).

32. 16 U.S.C. § 1373 (2012).

33. Act of Oct. 9, 1981, Pub. L. No. 97-58, 95 Stat. 979.

34. 16 U.S.C. § 1371(a)(1) (2012).

35. *Id.*

36. 50 C.F.R. § 216.8 (2015).

37. See *Our Mission*, NOAA FISHERIES, [http://www.nmfs.noaa.gov/aboutus/our\\_mission.html](http://www.nmfs.noaa.gov/aboutus/our_mission.html) (last visited Apr. 16, 2016).

38. 16 U.S.C. § 1374 (2012).

39. *About the U.S. Fish and Wildlife Service*, U.S. FISH & WILDLIFE SERVICE, [http://www.fws.gov/help/about\\_us.html](http://www.fws.gov/help/about_us.html) (last visited Apr. 17, 2016).

When the MMPA was first passed, it allowed these permits to be issued for purposes of scientific research or public display.<sup>40</sup> After being amended several times, the statute now limits the public display permit by requiring the facility seeking a permit to “[offer] a program for education or conservation purposes *that is based on professionally recognized standards of the public display community*” (emphasis added).<sup>41</sup> Although this is a step in the right direction (as compared with not requiring any educational program at all), allowing the industry itself to determine what is a proper educational program has the potential to run counter to the very purpose of the MMPA itself.<sup>42</sup>

Allowing the industry of marine mammal parks and aquariums to regulate itself can easily lead to the propagation of inaccurate information, which is not based on science, as educational materials. The leading organization of members of this industry is the Alliance of Marine Mammal Parks & Aquariums (AMMPA).<sup>43</sup> Another professional organization in the industry is the Association of Zoos and Aquariums (AZA).<sup>44</sup> The AMMPA’s website does not discuss the accuracy of the information that is disseminated by its members’ educational programs and provides scarce objective measures of the educational impact that these programs have on visitors to the facilities; rather it contains polling results of the percentage of individuals that subjectively believe that they learned something from visiting one (or more) of the member facilities.<sup>45</sup> In fact, several organizations have pointed to the insufficiency of materials and inaccuracy of information which is disseminated by educational programs at public display facilities housing marine mammals.<sup>46</sup>

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40. Marine Mammal Protection Act of 1972, Pub. L. No. 95-522, 86 Stat. 1027, 1034 § 104.

41. 16 U.S.C. § 1374(c)(2)(A)(i) (2012).

42. See 16 U.S.C. § 1361(4) (2012) (legislative finding that steps should be taken to encourage arrangements “for research on, and conservation of, all marine mammals.”).

43. See *Our Members*, ALLIANCE OF MARINE MAMMAL PARKS & AQUARIUMS, <http://www.ammpa.org/ourmembers.html> (last visited Apr. 16, 2016).

44. See ASSOCIATION OF ZOOS & AQUARIUMS, <https://www.aza.org/> (last visited Apr. 16, 2016).

45. *Frequently Asked Questions*, ALLIANCE OF MARINE MAMMAL PARKS & AQUARIUMS, <http://ammpa.org/faqs.html#3> (last visited Apr. 16, 2016) (“The Alliance’s earliest poll, conducted by Roper Starch, in 1998, surveyed guests visiting Alliance member facilities. It found that almost everyone (97%) interviewed said their experience had an impact on their appreciation and knowledge of the animals. The impact was even greater for those visiting parks and aquariums where guests had an opportunity to interact with marine mammals. Ninety-four percent (94%) of the parks’ visitors interviewed for the poll said, “I learned a great deal about marine mammals today.”)

46. Stephanie Dodson Dougherty, Comment, *The Marine Mammal Protection Act: Fostering Unjust Captivity Practices Since 1972*, 28 J. LAND USE & ENVT'L. L. 337, 340 (2013); Naomi A. Rose, *The Case Against Marine Mammals in Captivity*, THE HUMANE SOC'Y OF THE

According to the AMMPA's website, sixty-five percent of its members' captive marine mammals were born in captivity;<sup>47</sup> this means that thirty-five percent of the animals were born in the wild. Additionally, some of the marine mammals that are currently in captivity are part of rehabilitation programs, or consist of animals that are unable to be returned to the wild.<sup>48</sup>

By enacting the MMPA, Congress also created the Marine Mammal Commission (MMC).<sup>49</sup> One of the duties of the MMC is to appoint "nine scientists knowledgeable in marine ecology and marine mammal affairs" for a Committee of Scientific Advisors on marine mammals.<sup>50</sup>

While the MMC is committed to preserving "scientific integrity,"<sup>51</sup> there is currently no mechanism by which it can ensure the veracity of the educational materials relied upon by the industry in setting forth the "professionally recognized standards" with which an organization must comply in order to be entitled to obtain a takings or import permit for a marine mammal under the MMPA. This is problematic because the educational materials that are promulgated by public display facilities have been criticized as misleading by interest-groups.<sup>52</sup> The Humane Society of the United States points to the information promulgated by Sea World regarding evolution, its explanation of "drooping fin" syndrome, and the life-spans of captive orcas as examples of misleading education.<sup>53</sup>

### 3. Endangered Species Act

Several species of marine mammals are also regulated by the ESA. The ESA regulates any animal that is listed as "endangered" or "threatened."<sup>54</sup> In particular, such marine mammals as Chinese

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U.S. 3-4, [http://www.humanesociety.org/assets/pdfs/marine\\_mammals/case\\_against\\_marine\\_captivity.pdf](http://www.humanesociety.org/assets/pdfs/marine_mammals/case_against_marine_captivity.pdf).

47. *Standards and Guidelines*, ALLIANCE OF MARINE MAMMAL PARKS & AQUARIUMS, 2 [http://www.ammpa.org/\\_docs/S\\_GSummary2010\\_2.pdf](http://www.ammpa.org/_docs/S_GSummary2010_2.pdf).

48. See NMFS Procedural Directive, *Process for Placing Non-Releasable Marine Mammals from the Stranding Program into Permanent Care Facilities* (2012), <http://www.nmfs.noaa.gov/op/pdfs/documents/02/308/02-308-02.pdf> (setting forth procedures for a public display facility to acquire a rehabilitated, non-releasable marine mammal).

49. 16 U.S.C. § 1401 (2012).

50. 16 U.S.C. § 1403(a) (2012).

51. *Scientific Integrity at the Marine Mammal Commission*, MARINE MAMMAL COMM'N, (Feb. 14, 2012), [http://www.mmc.gov/commission\\_policies/pdfs/sci\\_integrity\\_policy.pdf](http://www.mmc.gov/commission_policies/pdfs/sci_integrity_policy.pdf).

52. See, e.g., Rose, *supra* note 46, at 3-4; Vanessa Williams, *Captive Orcas Dying to Entertain You: The Full Story*, WHALE & DOLPHIN CONSERVATION SOC'Y, 51-53, <http://uk.whales.org/sites/default/files/dying-to-entertain-you.pdf>.

53. Rose, *supra* note 46, at 3.

54. 16 U.S.C. § 1531(b) (2012).

River Dolphin, Dugong, West Indian Manatee, Steller Sea Lion, Hawaiian Monk Seal, Beluga Whale, and Southern Resident Killer Whale are listed as endangered and Polar Bear, Bearded Seal, and Guadalupe Fur Seal are listed as threatened, among many others.<sup>55</sup> For example, in February 2015, administrative rulemaking procedures were initiated to list Lolita, a captive killer whale at the Miami Seaquarium, as part of the Southern Resident killer whales species, which is endangered.<sup>56</sup> Currently, Lolita falls under an exception to the federal regulations that allows her to not be categorized as part of the endangered subset of killer whales due to her status in captivity.<sup>57</sup> The proposed rules, however, would eliminate this exception and classify her as endangered.<sup>58</sup> The practical effect that this would have would be to require a permit, pursuant to the ESA, in order to sell her or release her into the wild.<sup>59</sup>

One may wonder how the ESA and the MMPA work together to regulate marine mammals. The ESA provides that if it and the MMPA ever conflict as to the regulation of a particular species, the MMPA will control so long as the conflicting MMPA provision is more restrictive than the ESA provision.<sup>60</sup>

#### 4. Animal Welfare Act

The main source of law that governs the conditions of marine mammals after they are taken from the wild is the AWA.<sup>61</sup> The AWA is enforced by the Animal and Plant Health Inspection Service (APHIS), which is an arm of the United States Department of Agriculture (USDA).<sup>62</sup> The AWA requires that any individual or organization obtain a license in order to transport or sell an

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55. 50 C.F.R. § 224.101(h) (2015); 50 C.F.R. § 17.11(h) (2015).

56. *Southern Resident Killer Whale – Lolita – Included in Endangered Listing*, NOAA FISHERIES, (Feb. 10, 2016), [http://www.westcoast.fisheries.noaa.gov/protected\\_species/marine\\_mammals/killer\\_whale/lolita\\_petition.html](http://www.westcoast.fisheries.noaa.gov/protected_species/marine_mammals/killer_whale/lolita_petition.html).

57. 50 C.F.R. § 224.101(h) (2015).

58. Listing Endangered or Threatened Species: Amendment to the Endangered Species Act Listing of the Southern Resident Killer Whale Distinct Population Segment, 80 Fed. Reg. 7380 (Feb. 10, 2015) (to be codified at 50 C.F.R. pt. 224), <http://www.westcoast.fisheries.noaa.gov/publications/frn/2015/80fr7380.pdf>.

59. *Questions & Answers on NOAA Fisheries' Final Rule on a Petition to Include Lolita in the ESA Listing of Southern Resident Killer Whales (Feb. 2015)*, NOAA FISHERIES, [http://www.westcoast.fisheries.noaa.gov/protected\\_species/marine\\_mammals/killer\\_whale/24\\_esa\\_status\\_-\\_lolita\\_final\\_rule.html](http://www.westcoast.fisheries.noaa.gov/protected_species/marine_mammals/killer_whale/24_esa_status_-_lolita_final_rule.html) (last visited Apr. 16, 2016).

60. 16 U.S.C. § 1543 (2012).

61. 7 U.S.C. § 2131 (2012).

62. See generally 7 U.S.C. § 2131 (2012); *Animal Welfare*, U.S. DEPT OF AGRIC. ANIMAL & PLANT HEALTH INSPECTION SERVICE, <http://www.aphis.usda.gov/wps/portal/aphis/ourfocus/animalwelfare> (last visited Apr. 16, 2016).

animal.<sup>63</sup> These individuals and organizations are further subject to regulation under the administrative rules that have been promulgated by APHIS for “Animal Health and Husbandry”<sup>64</sup> and “Transportation.”<sup>65</sup>

These regulations set forth the minimum requirements for a marine mammal’s enclosure,<sup>66</sup> conditions within those enclosures,<sup>67</sup> employee training,<sup>68</sup> and animal health requirements.<sup>69</sup> Many of these requirements were set by the 2001 amendments to the regulations which were developed by the Marine Mammal Negotiated Rulemaking Advisory Committee (Committee).<sup>70</sup> The Committee contained representatives from multiple organizations, including the American Zoo and Aquarium Association (now known as the Association of Zoos & Aquariums), the AMMPA, the International Association of Amusement Parks and Attractions, and the MMC, among others.<sup>71</sup>

These regulations, however, leave two important items to industry self-regulation: employee training requirements<sup>72</sup> and transportation restrictions.<sup>73</sup> APHIS regulations require that trainers and handlers of the captive marine mammals “must meet professionally recognized standards for experience and training.”<sup>74</sup> This phrase, however, is not defined anywhere. This is problematic because it leaves the industry to regulate itself on this particular issue (even more so than allowing the industry substantial input as to the captivity requirements) and essentially strips APHIS of power to meaningfully enforce any sort of experience or education requirements for trainers and employees, thus allowing organizations to employ under-qualified individuals to handle and interact with the animals.

### III. EDUCATIONAL REQUIREMENTS, HUSBANDRY PRACTICES AND INDUSTRY SELF-REGULATION

The two largest problems with the current regulatory regime governing captive marine mammals are the inaccuracy of

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63. 7 U.S.C. § 2134 (2012).

64. 9 C.F.R. § 3.100-.111 (2015).

65. 9 C.F.R. § 3.112-.118 (2015).

66. 9 C.F.R. § 3.101-.104 (2015).

67. 9 C.F.R. § 3.105-.107 (2015).

68. 9 C.F.R. § 3.108 (2015).

69. 9 C.F.R. § 3.109-.110 (2015).

70. See *Animal Welfare; Marine Mammals*, 66 Fed. Reg. 239-01 (Jan. 2, 2001) (to be codified at 9 C.F.R. pt. 3).

71. *Id.*

72. 9 C.F.R. § 3.108(d) (2015).

73. 9 C.F.R. § 3.113(c)(2) (2015).

74. 9 C.F.R. § 3.108(d) (2015).

educational materials that are promulgated by the public display facilities in order to obtain permits for taking marine mammals from the wild and the employment of under-qualified trainers and employees who handle the wild animals. Both of these are caused, or at least exacerbated, by the industry self-regulation which is endorsed by the regulations governing captive marine mammals.

### *A. Inaccurate Educational Material*

Several organizations, including the Humane Society of the United States<sup>75</sup> and the Whale & Dolphin Conservation Society,<sup>76</sup> have condemned the education programs developed by organizations like Sea World as being inaccurate and inadequate to justify granting a public display permit.<sup>77</sup> Sea World and the AMMPA are alleged to distribute misleading statistics as educational material in order to acquire permits required under the takings moratorium in the MMPA. Specifically, the organizations offer misleading information regarding life expectancy in captivity vs. in the wild, the causes of a bent dorsal fin on killer whales, whether the marine mammals have better lives in captivity or in the wild, and whether the enclosures used to hold the animals in captivity are detrimental to their health.<sup>78</sup>

It is important to note before proceeding, however, that in at least one regard the industry has taken steps in the right direction. In recent years most public display facilities have opted to take rescued animals, rather than captured animals, for display purposes.<sup>79</sup> Although this is a step in the right direction, further steps must be taken to reduce the amount of industry-influence in the regulation of public display facilities.

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75. THE HUMANE SOCIETY OF THE UNITED STATES, <http://www.humanesociety.org/> (last visited Apr. 16, 2016).

76. WHALE & DOLPHIN CONSERVATION SOCIETY, <http://us.whales.org/> (last visited Apr. 16, 2016).

77. See, e.g., Rose, *supra* note 46, at 3-4; Williams, *supra* note 52, at 51-53.

78. See *infra* Part II.A.4.

79. See, e.g., *Marine Mammal FAQ*, Sea World, <http://seaworld.com/en/truth/killer-whales/marine-mammal-faq/#acquire> (last visited Apr. 16, 2016). See also NMFS Procedural Directive, *Process for Placing Non-Releasable Marine Mammals from the Stranding Program into Permanent Care Facilities* (2012), <http://www.nmfs.noaa.gov/op/pds/documents/02/308/02-308-02.pdf> (last visited Apr. 9, 2016) (setting forth the procedures for a public display facility to acquire a rehabilitated, non-releasable marine mammal).

## 1. Life Expectancy

Sea World's website informs visitors that "[n]o one knows for sure how long killer whales live."<sup>80</sup> It does, however, state that killer whales may live to thirty-five years, and that the life expectancy of killer whales that survive the first six months is between thirty and fifty years.<sup>81</sup> The AMMPA informs visitors to its website that "Beluga and killer whales in [their] facilities live as long as or longer than those in the wild."<sup>82</sup> These statements, however, are misleading. Several studies have shown that the estimated life expectancy for killer whales is between sixty and ninety years, depending on the sex of the whale.<sup>83</sup> The life expectancy for captive killer whales is often much shorter than this, with most dying before the age of twenty-five.<sup>84</sup> Furthermore, a relatively recent study of the life expectancy of wild Beluga whales indicated that they can routinely live to be sixty years old,<sup>85</sup> while the average life expectancy for captive Beluga whales is around twenty years.<sup>86</sup>

The AMMPA's website also indicates that "[t]he mortality rate of dolphins in marine parks is well below the mortality rate of dolphins in the wild."<sup>87</sup> However, studies have demonstrated that mortality rates for bottlenose dolphins and killer whales are much higher in captivity than in the wild.<sup>88</sup> This shortened life expectancy for marine mammals in captivity is likely caused by the stresses associated with being captured from the wild, the transportation between facilities, and the inadequate conditions at the facilities.<sup>89</sup>

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80. *Killer Whales: Longevity & Causes of Death*, SEA WORLD, <http://seaworld.org/en/animal-info/animal-infobooks/killer-whale/longevity-and-causes-of-death/> (last visited Apr. 16, 2016).

81. *Id.*

82. *Frequently Asked Questions*, ALLIANCE OF MARINE MAMMAL PARKS & AQUARIUMS, <http://www.ammpa.org/faqs.html#1> (last visited Apr. 16, 2016).

83. Williams, *supra* note 52, at 9-10, 14.

84. *Id.* at 40-41.

85. R.E.A. Stewart, S.E. Campana, C.M. Jones, & B.E. Stewart, *Bomb Radiocarbon Dating Calibrates Beluga (Delphinapterus leucas) Age Estimates*, 84 CANADIAN J. OF ZOOLOGY 1840, 1845-50 (2006).

86. Mike Schneider, *Analysis Shows Long Lives at SeaWorld: But Critics Say Quality of Life is the Real Issue*, THE BOSTON GLOBE, <http://www.bostonglobe.com/news/nation/2014/07/03/some-seaworld-mammals-survive-longercaptivity/JWxo6cwSRpmVXfEW9RRrxK/story.html> (July 4, 2014).

87. *Id.*

88. Erich Hoyt, Howard E. Garrett, & Naomi A. Rose, *Observations of Disparity Between Educational Material Related to Killer Whales (Orcinus Orca) Disseminated by Public Display Institutions and the Scientific Literature* at 8, <http://www.orcanetwork.org/nathist/biennial.pdf>; Williams, *supra* note 52, at 38-41.

89. Williams, *supra* note 52, at 41-42.

## 2. Bent Dorsal Fin

SeaWorld's website indicates that some killer whales may have bent dorsal fins.<sup>90</sup> It then provides a statistic about observations of wild killer whales around New Zealand, implying that this is a naturally occurring phenomenon.<sup>91</sup> Research indicates, however, that although this is naturally occurring, it occurs far less often in wild populations than it does in captive populations.<sup>92</sup> Furthermore, research has shown that bent dorsal fins can be a manifestation of poor health and stress, albeit in different cetacean species.<sup>93</sup>

## 3. Better Lives in Captivity?

Sea World and other members of the industry often imply that killer whales, dolphins, and other marine mammals live better lives in captivity than they would in the wild because they are well taken care of. For example, the AMMPA states that “[w]ild animals live daily with many challenges to their survival. Predators, hunger, noise, parasites, and environmental pollution are just a few of the challenges animals in the wild must contend with every day. Animals in Alliance member facilities live without the stress of these considerable daily challenges.”<sup>94</sup> This statement, however, fails to address the stress of living in a small enclosure on these animals that are used to traveling up to 100 miles per day in the wild.<sup>95</sup> Furthermore, this characterization does not account for the stress caused to whales, and other marine mammals, by removing them from their social group and injecting them into a different social group with unique and different dynamics.<sup>96</sup>

## 4. Effect of Enclosures on Health

The members of the public display industry fail to include any information in their educational materials that discuss the negative

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90. *Killer Whales: Physical Characteristics*, SEA WORLD, <http://seaworld.org/en/animal-info/animal-infobooks/killer-whale/physical-characteristics/> (last visited Apr. 16, 2016).

91. *Id.*

92. *See, e.g.*, Rose, *supra* note 46.

93. *See generally* Robin W. Baird & Antoinette M. Gorgone, *False Killer Whale Dorsal Fin Disfigurements as a Possible Indicator of Long-line Fishery Interactions in Hawaiian Waters*, 59 PACIFIC SCIENCE 593 (2005), [https://scholarspace.manoa.hawaii.edu/bitstream/handle/10125/24202/PacSci\\_593-602.pdf?sequence=1](https://scholarspace.manoa.hawaii.edu/bitstream/handle/10125/24202/PacSci_593-602.pdf?sequence=1).

94. *Frequently Asked Questions*, ALLIANCE OF MARINE MAMMAL PARKS & AQUARIUMS, <http://www.ammpa.org/faqs.html#2> (last visited Apr. 16, 2016).

95. *Whale Attack Renews Captive Animal Debate*, CBSNEWS, <http://www.cbsnews.com/news/whale-attack-renews-captive-animal-debate/> (Mar. 1, 2010).

96. *See* Williams, *supra* note 52, at 9-10.



effects that captivity, generally, or of the specific enclosures in which the animals are housed, imposes upon the marine mammals. The size of the enclosures, their use of artificially salinated and recycled water, the social-group dynamics of animals placed together in enclosures, and solitary confinement all pose potential harm to captive marine mammals. These particular harms are discussed more completely in Part II.C, *infra*. However, at this point, it is important to note that the public display facilities largely do not address these harms in their educational materials; rather, they often portray the conditions of captivity as preferable to the conditions of animals' natural habitats.<sup>97</sup>

*B. The Inherently Dangerous Nature  
of Interacting With Captive Marine Mammals*

Relatively recent events have shown that the industry is not doing enough to regulate its employees' interactions with marine mammals, leading to the injury and even death of several employees.<sup>98</sup> A recent administrative proceeding brought by OSHA has demonstrated the inherently dangerous nature of interacting with wild animals – even those bred in captivity.<sup>99</sup> This danger is exacerbated by the industry allowing under-qualified individuals<sup>100</sup> to interact with the animals in close proximity – a product of industry self-regulation.

The lack of meaningful safety precautions has led to the deaths of three trainers while interacting with killer whales in public display facilities.<sup>101</sup> Perhaps the public display facilities have taken every precaution that they could to ensure the safety of trainers once they begin to interact with captive marine mammals (specifically cetaceans); but perhaps, as OSHA found, the interaction itself is simply too dangerous to expose employees to.<sup>102</sup>

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97. See, *supra* Part II.A.3.

98. See, e.g., Anika Myers Palm & Eloisa Ruano Gonzalez, *SeaWorld Trainer Tribute: Shamu Believe Show Resumes with Standing Ovation*, ORLANDO SENTINEL, <http://www.orlandosentinel.com/business/tourism/os-seaworld-orlando-shamu-injury-20100224-story.html#page=1> (Feb. 27, 2010); *Corpse is Found on Whale*, N.Y. TIMES, <http://www.nytimes.com/1999/07/07/us/corpse-is-found-on-whale.html> (July 7, 1999).

99. Secretary of Labor v. SeaWorld of Florida, LLC, 244 O.S.H. Cas. (BNA) 1303 (2012).

100. See 9 C.F.R. § 3.108 (2015).

101. Secretary of Labor v. SeaWorld of Florida, LLC, 244 O.S.H. Cas. (BNA) 1303, at \*14 (2012).

102. *Id.* at 13-14.

### *C. Harm to the Captive Marine Mammals*

Members of the marine mammal public display industry assure the public that the practices used in holding marine mammals captive are adequate to ensure the health and well-being of the animals.<sup>103</sup> This, however, is not true. Scientific research and observation have demonstrated that captivity can be harmful to multiple species of marine mammals.<sup>104</sup>

This is not to say that the marine mammals public display industry has not taken steps in the right direction. To be sure, a majority of marine mammals that are currently held in captivity were either birthed in captivity or are part of a rehabilitation program and have been deemed unfit for release into the wild.<sup>105</sup> Although this is an improvement over the practice of capturing wild animals for display, which can only be done under the public display and scientific research exceptions to the MMPA's moratorium on taking wild marine mammals, it is not ideal. This practice is not ideal because the conditions of captivity themselves are detrimental to the animals' health.<sup>106</sup>

#### 1. Conditions of Captivity

The overarching problem with holding marine mammals in captivity is that it is nearly impossible for even the most diligent and well-funded facility to maintain an environment which is comparable to the natural environments of most species of marine mammals. This section will explore the problems inherent in maintaining cetaceans (whales and dolphins), pinnipeds (seals, walruses, and sea otters), and polar bears in captivity to provide examples of the problems inherent with marine mammal captivity.

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103. See, e.g., *Frequently Asked Questions*, ALLIANCE OF MARINE MAMMAL PARKS & AQUARIUMS, <http://ammpa.org/faqs.html#1> (last visited Apr. 16, 2016); *Polar Bears: Conservation & Research*, SEA WORLD, <https://seaworld.org/Animal-Info/Animal-InfoBooks/Polar-Bears/Conservation-and-Research> (last visited Apr. 16, 2016).

104. See *infra* Part II.C.1.

105. See *Frequently Asked Questions*, ALLIANCE OF MARINE MAMMAL PARKS & AQUARIUMS, [HTTP://AMMPA.ORG/FAQS.HTML#13](http://ammpa.org/faqs.html#13) (last visited Apr. 16, 2016); *Frequently Asked Questions (FAQ's) – Ask Shamu*, SEA WORLD, [http://seaworld.org/en/animal-info/ask-shamu/faq/?\\_\\_utma=1.1950111309.1428626960.1428626960.1428715766.2&\\_\\_utmb=1.15.10.1428715766&\\_\\_utmc=1&\\_\\_utmz=1.1428715766.2.2.utmcsr=seaworldparks.com|utmccn=\(referral\)|utmcmd=referral|utmcct=/en/seaworldorlando/&\\_\\_utmv=&\\_\\_utmk=213570580](http://seaworld.org/en/animal-info/ask-shamu/faq/?__utma=1.1950111309.1428626960.1428626960.1428715766.2&__utmb=1.15.10.1428715766&__utmc=1&__utmz=1.1428715766.2.2.utmcsr=seaworldparks.com|utmccn=(referral)|utmcmd=referral|utmcct=/en/seaworldorlando/&__utmv=&__utmk=213570580) (last visited Apr. 16, 2016).

106. See Rose, *supra* note 46, at 13.

*a. Cetaceans*

The main problems that are present with housing cetaceans in captivity are the small size of the enclosures when compared with the open ocean and the lack of natural social interactions among the individual animals.<sup>107</sup> Most facilities utilize either completely artificial habitats or structures called “sea-pens,” depending on the facility’s location, to hold captive cetaceans.<sup>108</sup> Both of these types of enclosures present unique stresses for the animals.

Artificial habitats are utilized in inland facilities such as Sea World. These enclosures are typically made of concrete, surrounded by bleachers for audiences, and are filled with artificially-salinated water that is constantly filtered. These enclosures severely constrain movement, as the AWA regulations require enclosure sizes that are drastically smaller than the area that the average cetacean would swim in a day.<sup>109</sup> Furthermore, the wild-caught animals are often placed in enclosures with animals from other social groupings, resulting in conflict among the animals housed in a single enclosure.<sup>110</sup>

Sea-pens may be utilized by facilities that are located on the coast. Sea-pens consist of a portion of the coastal ocean that has been fenced off in order to provide an enclosure for captive marine animals.<sup>111</sup> Although sea pens are thought to be better for marine mammals’ health than the alternatives, there are several conditions which pose problems for animal well-being. Namely, although sea pens provide captive cetaceans with actual sea water, and provide a much more stimulating and interesting environment, these types of enclosures open their inhabitants up to magnified harms from pollution, sound, and the effects of natural catastrophes such as hurricanes.<sup>112</sup>

*b. Pinnipeds*

The main problem with housing pinnipeds in captivity is the size of the enclosures compared with the wild. Most pinnipeds are migratory by nature, traveling thousands of miles each year on

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107. Rose, *supra* note 46, at 17-18, 21-22.

108. *Id.*

109. See 9 C.F.R. § 3.104 (2015). Cetaceans, depending on the species, can swim up to 150 miles per day. Rose, *supra* note 46, at 21.

110. Rose, *supra* note 46, at 21-22; Naomi A. Rose, *A Win-win Solution for Captive Orcas and Marine Theme Parks*, CNN, <http://www.cnn.com/2013/10/24/opinion/blackfish-captive-orcas-solutions/> (Oct. 28, 2013).

111. Rose, *A Win-win Solution*, *supra* note 110.

112. Rose, *supra* note 46, at 17-18.

such a journey.<sup>113</sup> Any sort of captivity facility will be unable to accommodate such travel, for which many pinniped species have evolved for thousands of years.<sup>114</sup> Furthermore, although most facilities provide a reasonable amount of dry space for seals and walruses, they fail to provide an adequately large area for the animals to swim and exercise.

### *c. Polar Bears*

The small size of the enclosures, along with the inability of artificial enclosures to adequately mimic essential aspects of the polar bears' native environment, such as the ability for mothers to den with their young, have been shown to be detrimental to polar bears' health.<sup>115</sup> These problems are similar to those which plague the captivity of other marine mammal species.<sup>116</sup> Along with this is the fact that polar bears are often placed in a single enclosure with other polar bears for many years at a time, something that would not necessarily occur in nature, and can cause a harmful level of stress to captive polar bears.<sup>117</sup> The effects of these harms can be witnessed by watching polar bears pace back and forth for hours in their small enclosures, trying to get exercise that would be similar to the amount that they receive in the wild.<sup>118</sup>

## 2. Problems with Breeding of Captive Marine Mammals

Although breeding animals for purposes of public display does not raise the concern of holding a *wild* animal in captivity, it still does raise concerns about the adequacy of captivity generally for marine mammals. In particular, it still presents the concern of unnecessarily subjecting animals to conditions of captivity, e.g., artificial enclosures, forced interaction with members of other social groups, etc., ostensibly for the purpose of public display. As has been discussed, *supra*, public display programs do not adequately educate

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113. For instance, northern elephant seals migrate up to 13,000 miles per year. Kara Rogers, *Northern Elephant Seals: Masters of Mammal Migration*, ENCYCLOPEDIA BRITANNICA BLOG, <http://blogs.britannica.com/2011/05/northern-elephant-seals-masters-mammal-migration/> (May 4, 2011). The Pacific walrus is another species that migrates every year. Francis H. Fay, *Ecology and Biology of the Pacific Walrus*, *Odobenus Rosmarus Divergens Illiger*, U.S. DEPT. OF THE INTERIOR, FISH & WILDLIFE SERVICE (1982), <http://fwspubs.org/doi/pdf/10.3996/nafa.74.0001>.

114. See Rose, *supra* note 110.

115. Rose, *supra* note 46, at 19-20.

116. See generally, *supra* Part II.C.

117. Rose, *supra* note 46, at 19.

118. See, e.g., *Pacing Polar Bears*, YOUTUBE, <https://www.youtube.com/watch?v=DZshi2kj9T4> (Feb. 8, 2008).

the visitors to justify the harms inflicted on marine mammals.<sup>119</sup> This is problematic because animals are being bred solely to be subjected to these conditions of captivity.

Many public display facilities breed the captive marine mammals for conservation purposes.<sup>120</sup> This practice, however, yields a low number of captive-bred animals that are subsequently released into the wild (or are even capable of being released).<sup>121</sup> Therefore, it does not adequately serve the interest of conservation to justify the harms imposed on the captive marine mammals.

### 3. Conflicts of Interest

The point of this Note is not to argue that the public display industry is evil or indifferent to the welfare of the animals that are placed on display. Rather the argument is that the industry should not be left to regulate itself because various actions which are in the best interests of the member-facilities are at odds with the best interests of the animals that are on display. This section will briefly discuss this conflict of interests, and highlight why it is a problem.

#### *a. Educating the Public About Effects of Captivity on Wild Animals*

Industry self-regulation fails to adequately protect the interests of the captive marine mammals in the context of the educational information promulgated by the public display facilities, because the industry and the animals have conflicting interests. The public display industry has an incentive to only promulgate educational material that casts marine mammal captivity in a positive light. It would harm the public display facilities' image to distribute information that details the harm caused by captivity to marine mammals.<sup>122</sup> Rather, the display facilities act in-line with their own interests, and distribute the information that comports with "professionally recognized standards," in accordance with the requirements of the MMPA,<sup>123</sup> and paints the industry in a good light.<sup>124</sup>

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119. See *supra* Part II.A.

120. See *Frequently Asked Questions*, ALLIANCE OF MARINE MAMMAL PARKS & AQUARIUMS, <http://ammpa.org/faqs.html> (last visited Apr. 16, 2016).

121. See Dougherty, *supra* note 46, at 353-57.

122. See *supra* Parts II.A.4 and II.C.

123. 16 U.S.C. § 1374(c)(2)(A)(i) (2012).

124. The inaccuracies of this information are discussed, *supra* Part II.A.

*b. Housing Animals in Enclosures that Would be Least Harmful to Their Health*

The interests of the public display industry and those of the captive marine mammals do not align with regard to the size and adequacy of housing enclosures. It is in the best interest of the public display industry to have the most cost-effective enclosures possible. This is in conflict with the best interest of the captive marine mammals, which is to have the conditions of captivity closely mimic (if not perfectly mirror) those that exist in the animals' natural habitats.

Surely, public display facilities do have an interest in having enclosures that will maintain the health of the captive marine mammals; otherwise they can derive no income from the animals. However, due to the prohibitive costs that would be imposed by constructing enclosures that would more closely resemble the conditions of the animals' natural environments,<sup>125</sup> it is not in the best interest of the public display facility to construct enclosures that are much better than the bare minimum required by the AWA regulations.<sup>126</sup> Recent public outcry in response to the documentary *Blackfish* has even prompted Sea World to double the size of its killer whale enclosures.<sup>127</sup> However, not all public display facilities have the resources that Sea World does, as many are smaller seaquariums or aquariums.<sup>128</sup>

*c. When the Interests of the Industry and the Animals Align – Housing Rehabilitated Animals that Cannot be Released.*

One instance in which the interests of the public display industry and those of the captive animals overlap is when public display facilities make the choice to house rehabilitated animals that are not fit for release into the wild. In this case, the industry's interest generally in housing marine mammals for public display and that of the animals in being held in captivity (as they have been deemed unfit for release into the wild) are aligned. This will be

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125. See Rose, *supra* note 46, at 21-22.

126. See 9 C.F.R. § 3.104 (2015).

127. *SeaWorld to Double Size of Killer Whale Enclosure*, CBS8.com, <http://www.cbs8.com/story/26288856/seaworld-to-double-size-of-killer-whale-enclosure> (Aug. 15, 2014).

128. See, e.g., *Our Members*, ALLIANCE OF MARINE MAMMAL PARKS & AQUARIUMS, <http://ammppa.org/ourmembers.html> (last visited Apr. 17, 2016); *Find an AZA-Accredited Zoo or Aquarium*, ASSOCIATION OF ZOOS & AQUARIUMS, <https://www.aza.org/findzooaquarium/> (last visited Apr. 17, 2016).

discussed further, *supra* in Part III.3 as a possible solution to the problems presented by this Note.

#### *D. Problems with APHIS Enforcement.*

Although APHIS does have a history of enforcing regulations related to animal welfare, the agency does not have expertise in conditions unique to marine mammals, and it has a track record of lax enforcement.<sup>129</sup> APHIS has also previously been criticized for its inadequate enforcement of the AWA in other settings, such as animal testing for pharmaceutical purposes.<sup>130</sup> Furthermore, the regulations governing enclosure size, themselves, demonstrate APHIS's inadequacy in enforcing the welfare of captive marine mammals, as the enclosure sizes, rather than being based on objective scientific evidence, were merely adopted from the already-existing sizes in public display facilities at the time that the regulations were passed.<sup>131</sup> This is problematic because it demonstrates that there is nothing, be it regulations or agency enforcement, that provides meaningful protection for the wellbeing of captive marine mammals.

### IV. PROPOSED SOLUTION

Although the MMPA does, and the AWA should, require that the “professionally recognized standards” be informed by scientific evidence, it provides the industry ample discretion to regulate itself.<sup>132</sup> This is problematic because, as discussed above, the public display industry has interests that conflict with embracing objective scientific evidence.<sup>133</sup> Furthermore, having multiple agencies enforce different portions of the regulatory regime governing these organizations leads to a disconnect in enforcement, particularly since the agency that oversees the care of captive marine mammals after they have been taken from the wild, i.e., once they are in transport and in the housing facilities, is the agency that has less expertise in dealing with marine mammals.<sup>134</sup>

In order to remedy these two problems, this section will propose a solution that will incorporate two main points: 1) that the public display facilities should be subject to objective regulations that are

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129. Dougherty, *supra* note 46, at 360-64.

130. GARY L. FRANCONI, RAIN WITHOUT THUNDER: THE IDEOLOGY OF THE ANIMAL RIGHTS MOVEMENT 115-16 (Temple University Press 1996).

131. Dougherty, *supra* note 46, at 361.

132. See 16 U.S.C. § 1374(c)(2)(A)(i) (2012); 9 C.F.R. § 3.108(d) (2015).

133. See *supra* Part II.C.

134. APHIS vs. NMFS (advised by the MMC).

based on the best scientific information available, and 2) that this regime should be enforced by an agency with expertise in the care of marine mammals, such as NOAA. Furthermore, these facilities should only house animals which have been injured and subsequently rescued from the wild and undergone rehabilitation, yet are unable to be released into the wild.

*A. Base Regulations on Best  
Scientific Information Available*

The MMPA already includes a mandate that its regulations be based upon the “best scientific evidence available.”<sup>135</sup> This mandate should be added to the AWA as well, as it concerns the goals of conservation and preservation of marine mammals as much as, if not more than the MMPA does, in the context of the public display industry.

Currently, although the MMPA does, and the AWA should, require that regulations issued under them are based on scientific evidence, the statutes give broad self-regulatory authority to the industry itself. As discussed above, this industry self-regulation results in conflicts of interest that inhibit the use of objectively reliable material being placed in the industry members’ educational material, or to provide the best conditions of captivity possible for the marine mammals.<sup>136</sup> Requiring that the educational materials be based on objective scientific evidence would ensure that the public is fully informed about the harms to the animals caused by the conditions of captivity and the benefits of public display and reach an unbiased conclusion as to whether the harms are justified by the benefits. Additionally, if trainer qualifications were dictated by objective measures, rather than by industry self-regulation, then perhaps there would be less under qualified individuals interacting with potentially dangerous creatures, and less injuries resulting from interactions.

*B. Empower a Specialized Agency  
with Experience in Regulating Marine  
Mammals, such as NOAA, with  
Setting Captivity Guidelines*

Due to APHIS’s lack of meaningful enforcement of the AWA in the context of captive marine mammals,<sup>137</sup> NOAA should be given

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135. See 16 U.S.C. § 1373 (2012).

136. *Supra* Part II.C.3.

137. *Supra* Part II.D.



authority to regulate the conditions of captivity for marine mammals. This would be beneficial for the animals because NOAA (particularly the NMFS) has expertise in understanding the needs of marine mammals, as it is the main agency that is tasked with enforcing the MMPA.<sup>138</sup> Furthermore, NOAA is not plagued by the same reputation of acquiescence that plagues APHIS regarding the enforcement of its regulations.

*C. Only House Rehabilitated Animals  
that Cannot be Released Into the Wild.*

Some animals that are held in public display facilities are rehabilitated animals that are ineligible for release into the wild.<sup>139</sup> As mentioned in Part III.C, *supra*, this can happen when a marine mammal is stranded and, after rehabilitation, is considered by the NMFS to be “non-releasable” because either 1) the animal’s release could be detrimental to the wild animal population and/or 2) the animal is not likely to survive.<sup>140</sup> After this initial determination is made, the NMFS must then determine into which public display facility the non-releasable mammal will be placed.<sup>141</sup>

Some of the things that can be considered are the demographics of the other animals that will be housed in the same enclosure (e.g., how many males/females, age of animals), specific information regarding the enclosure in which the animal will be housed (e.g., whether there is a nursery area, if the animal will need to be quarantined), details regarding transportation to the facility (e.g., how long will transportation take, what type of transportation will be employed, how soon the transportation can be arranged), and information regarding veterinarians on staff.<sup>142</sup>

Although the practice of housing non-releasable marine mammals for public display is preferable to the alternatives (i.e., taking marine mammals from the wild, purchasing marine mammals which have been taken from the wild, or breeding them in captivity), it is far from perfect. This practice does not address the concerns with the adequacy of the conditions of captivity, and thus the humane treatment, of these animals.<sup>143</sup> The public display industry, collectively, is already embracing the practice of

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138. 16 U.S.C. § 1374 (2012).

139. See 16 U.S.C. § 1421 (2012); NMFS Procedural Directive, *Process for Placing Non-Releasable Marine Mammals from the Stranding Program into Permanent Care Facilities* (2012), <http://www.nmfs.noaa.gov/op/pds/documents/02/308/02-308-02.pdf>

140. *Id.*

141. *Id.*

142. *Id.* at 7-9.

143. See *supra* Part II.C.1.

displaying non-releasable and captive-bred animals, rather than capturing wild animals, as the AMMPA already boasts that a majority of the animals in its members' facilities have either been bred in captivity, or taken in as non-releasable rehabilitated animals.<sup>144</sup>

## V. STANDING AND ENFORCEMENT OF STANDARDS FOR MARINE MAMMALS IN CAPTIVITY

Since the implementation of our Constitution, our federal courts have been ones of limited jurisdiction.<sup>145</sup> One of the ways in which the Supreme Court has ensured that only "cases" and "controversies" are brought before it has been to employ the doctrine of "standing," which limits who is able to bring a claim. This part will first briefly discuss the relevant history of the standing doctrine in federal courts. It will then discuss the modern standing doctrine and the problems that it has created with regard to enforcement of the AWA. Last, this part will propose a solution to this problem and discuss recent attempts at implementing it.

### *A. History of Federal Standing Doctrine*

Over the years, the Court's standing doctrine has evolved significantly. Rather than being set by Congress, this doctrine has been developed by the courts, serving as one way to ensure judicial restraint. Justice O'Connor, in the Court's opinion in *Allen v. Wright*,<sup>146</sup> described standing doctrine as:

embrac[ing] several judicially self-imposed limits on the exercise of federal jurisdiction, such as the general prohibition on a litigant's raising another person's legal rights, the rule barring adjudication of generalized grievances more appropriately addressed in the representative branches, and the requirement that a plaintiff's complaint fall within the zone of interests protected by the law invoked.<sup>147</sup>

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144. See, e.g., *Frequently Asked Questions*, ALLIANCE OF MARINE MAMMAL PARKS & AQUARIUMS, <http://ammpa.org/faqs.html#14> (last visited Apr. 16, 2016).

145. See U.S. CONST. ART. III § 2.

146. *Allen v. Wright*, 468 U.S. 737 (1984).

147. *Id.* at 751.

In line with this description of standing, the doctrine itself is often thought of as an act of judicial restraint, as to lessen concerns about the counter-majoritarian nature of a court of unelected officials serving life tenures.<sup>148</sup> In light of this description of the role of the standing doctrine, it has developed specifically in order to prevent two specific types of lawsuits: advisory opinions<sup>149</sup> and collusive, or non-adversarial, lawsuits.<sup>150</sup>

In 1940, the Supreme Court had begun expanding standing doctrine (at least when there was a statutory provision allowing it<sup>151</sup>), in order to allow a person who had no legal right, but was nonetheless affected by an agency decision, to challenge that decision.<sup>152</sup> When the Administrative Procedures Act (APA) was passed in 1946, it contained language that essentially codified this understanding of the standing doctrine with respect to all administrative actions.<sup>153</sup>

Over the next several decades, however, the Supreme Court further expanded the rights of the public to bring suit under the standing doctrine<sup>154</sup> before it began to contract the groups of individuals that were able to bring suit under the doctrine.<sup>155</sup> For instance, the Court limited the scope of public standing when it required in *Warth v. Seldin*<sup>156</sup> that, as one commentator phrased it, “Article III requires every plaintiff to show an individual injury that is caused by the defendant and can be redressed by the Court.”<sup>157</sup> This continued to happen until the Court’s decision in *Lujan v. Defenders of Wildlife*<sup>158</sup> narrowed the standing doctrine to the point at which it lies today.

Up until the 1970s, in the context of challenging administrative actions, the Court only required that an individual be able to show he or she has suffered an infringement

148. See Stone, et al., CONSTITUTIONAL LAW 91 (Aspen Publishers 2009).

149. See *Chicago & Southern Air Lines v. Waterman S.S. Corp.*, 333 U.S. 103, 113-14 (1948) (explaining the Court’s refusal to issue advisory opinions).

150. *United States v. Johnson*, 319 U.S. 302, 303-05 (1943) (stating that collusive suits “[do] not assume the ‘honest and actual antagonistic assertion of rights’ to be adjudicated—a safeguard essential to the integrity of the judicial process, and one which we have held to be indispensable to adjudication of constitutional questions by this Court.”).

151. See, e.g., *F.C.C. v. Sanders Bros. Radio Station*, 309 U.S. 470 (1940).

152. See *id.* at 477; Magill, *infra* note 159, at 1139-41.

153. 5 U.S.C. § 702 (2012) (“A person suffering legal wrong because of agency action, or adversely affected or aggrieved by agency action within the meaning of a relevant statute, is entitled to judicial review thereof.”); Magill, *infra* note 159, at 1150.

154. For instance, the D.C. Circuit Court of Appeals allowed consumers to challenge FCC regulations in *Office of Comm’n of United Church of Christ v. F.C.C.*, 359 F.2d 994 (D.C. Cir. 1966).

155. See discussion, *infra* Part IV.B.

156. 422 U.S. 490 (1975).

157. Magill, *infra* note 159, at 1178.

158. 504 U.S. 555 (1992).

of a legally recognizable right in order to have standing.<sup>159</sup> As Professor Magill explains, “the inquiry was straightforward: has the challenger asserted that the law requires the agency to take account of his interest and that agency has failed to do so?”<sup>160</sup> If the agency did not have to take the challenger’s interest into account, then he had no legal right and therefore could not have standing (absent a statutory provision that granted standing).<sup>161</sup>

*B. Modern Standing  
Doctrine and the Problems it  
Creates for AWA Enforcement*

The Supreme Court’s 1992 decision in *Lujan* severely limited standing for the public to challenge enforcement of laws. This case provides the modern view of the standing doctrine and requires that a plaintiff be able to demonstrate that he or she has suffered a legally cognizable injury (injury-in-fact),<sup>162</sup> that there was a causal relationship between the injury and the complained-of conduct (causation),<sup>163</sup> and that a favorable decision is likely to redress the harm (redressability).<sup>164</sup> Each of these requirements is discussed below.

1. Injury-in-Fact

The Court determined that, in order for a plaintiff to meet the Article III standing requirements, he must be able to show that the injury-in-fact there has been the intrusion of a legally protected interest, that intrusion is “concrete and particularized,” and “actual or imminent, not conjectural or hypothetical.”<sup>165</sup> The Court listed things such as aesthetic, environmental, and economic harms as invasions of legal rights which could qualify for injury-in-fact.<sup>166</sup> The “concrete and particularized” requirements necessitate that the plaintiff suffers the injury in a “personal and individual way,”<sup>167</sup>

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159. Elizabeth Magill, *Standing for the Public: A Lost History*, 95 VA. L. REV. 1131, 1136 (2009).

160. *Id.* at 1139.

161. *Id.*

162. *Id.* at 560.

163. *Id.*

164. *Id.*

165. *Id.*

166. *Id.* at 560; *Sierra Club v. Morton*, 405 U.S. 727, 734 (1972).

167. *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 561 n.1 (1992).

rather than “just having a special interest in the subject.”<sup>168</sup> And the Court has interpreted the “actual or imminent” requirement as only allowing standing where the plaintiff can show that the injury is not hypothetical, as the Court found it was in *Lujan* for plaintiffs that had traveled to Sri Lanka to observe the natural habitat of several endangered species and based injury off of the intent to return “in the future.”<sup>169</sup>

## 2. Causation

On causation, the Court noted that the injury must be “fairly traceable to the challenged action of the defendant, and not the result of the independent action of some third party not before the court.”<sup>170</sup> In other words, the causal chain must not be attenuated in order for a plaintiff to have standing to challenge an injury. This requirement ties into the next requirement, redressability, because the more attenuated the causal chain, the more difficult it is for a plaintiff to show that the lawsuit’s resolution is likely to remedy the injury.<sup>171</sup> For instance, if the harm to plaintiffs is caused by the actions of a third-party that is not regulated by the challenged agency action, it is much more difficult for the plaintiff to show that the Court’s action against the agency is likely to remedy the injury.<sup>172</sup>

## 3. Redressability

Last, the Court noted that it must be “likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision.”<sup>173</sup> In other words, “Article III requires not only that the defendant have caused the plaintiff’s injury in fact, but also that the federal court hearing the case be able to issue an order that could remedy the alleged injury in fact.”<sup>174</sup> If, for instance, a plaintiff requests that the defendant be jailed for failing to make payments to her because of the defendant’s lack of money, the plaintiff will

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168. Michael J. Ritter, Note, *Standing in the Way of Animal Welfare: a Reconsideration of the Zone-of-Interest “Gloss” on the Administrative Procedures Act*, 29 REV. LITIG. 951, 966 (2010).

169. *Lujan*, 504 U.S. at 563.

170. *Id.* at 560.

171. *Id.* at 561-62.

172. *Id.*

173. *Id.* at 561.

174. Ritter, *supra* note 168, at 967.

likely not have standing under the redressability requirement because that remedy cannot cure the plaintiff's injury.<sup>175</sup>

#### 4. "Zone of Interest" Test for Administrative Procedures Act Enforcement Challenges

Under the Administrative Procedures Act (APA), a party "suffering a legal wrong because of agency action, or adversely affected or aggrieved by agency action . . . is entitled to judicial review thereof."<sup>176</sup> In addition to the Article III's standing requirements, a court may require that a party be in the "zone of interest" in order to bring a claim under this provision i.e., "when the plaintiff is . . . within the class of persons that the relevant statutory . . . provisions intend to protect."<sup>177</sup> This provision has been interpreted to allow interested parties (who can demonstrate standing) to challenge agency actions, as well as agency inaction.<sup>178</sup> Challenges to agency inaction brought under this provision, however, will only be allowed to proceed if the agency action is one that it is required to take, rather than one that the agency has discretion to take.<sup>179</sup>

#### 5. Challenges that Standing Pose to Enforcement of AWA and MMPA

The AWA, unlike the ESA, lacks a citizen-suit provision that can be used to compel APHIS to enforce it.<sup>180</sup> This can stand as a barrier to challenges of APHIS's enforcement of the AWA because plaintiffs who wish to challenge agency action must be able to demonstrate compliance with both Article III standing doctrine and that they are within the "zone of interest." Previous challenges to the AWA's lack of enforcement have been largely unfruitful.<sup>181</sup>

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175. See, e.g., *Linda R.S. v. Richard D.*, 410 U.S. 614, 615-16 (1973).

176. 5 U.S.C. § 702 (2012).

177. Ritter, *supra* note 168, at 969.

178. See, e.g., *Lujan v. Nat'l Wildlife Fed'n*, 497 U.S. 871, 873 (1990) (stating that the action "will not be 'ripe' for challenge until some further agency action *or inaction* more immediately harming respondent occurs.") (emphasis added).

179. *Norton v. S. Utah Wilderness Alliance*, 542 U.S. 55, 64 (2004).

180. Ritter, *supra* note 168, at 972.

181. *Id.*; *Inst. of Marine Mammal Studies v. Nat'l Marine Fisheries Serv.*, 23 F. Supp. 3d 705, 713 (S.D. Miss. 2014).

*C. Solution and Recent  
Attempts at Implementing It*

Although the only true solution to the concerns raised above is for Congress to amend the MMPA and for APHIS to amend the existing rules that pertain to captive marine mammals, a step in the right direction could be taken by the courts. In light of the recent contraction of standing law under the citizen-suit provision of the APA,<sup>182</sup> the courts should allow organizations concerned with the welfare of captive marine mammals, such as the Whale and Dolphin Conservancy, the Humane Society of the United States, and People for the Ethical Treatment of Animals, to challenge the adequacy of the regulations and the failure of the agencies to meaningfully enforce the regulations on behalf of the injured captive marine mammals, in an *ex rel* capacity.

This has been attempted in the context of a couple of lawsuits brought in federal district courts in the past two decades. For instance, in 1993 the group Citizens to End Animal Suffering and Exploitation (CEASE) brought suit against the Department of the Navy challenging the transfer of a dolphin from the New England Aquarium to the Department of the Navy.<sup>183</sup> In that case, CEASE named the dolphin, Kama, as a plaintiff, and the Department of the Navy moved to dismiss Kama's claim for lack of standing.<sup>184</sup> The district court found that Kama did not have standing to bring suit under the MMPA or APA because the citizen-suit provisions were intended to only extend to "persons"; it would have required a clear statement from Congress that non-human animals were intended to have standing under these provisions in order to "take the extraordinary step of authorizing animals as well as people and legal entities to sue."<sup>185</sup>

Another example is a lawsuit that was brought in the Southern District of California,<sup>186</sup> though that suit did not challenge the public display regulations under the citizen-suit provision of the APA. Instead, the lawsuit alleged that five killer whales were being

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182. A notable exception to this contraction can be found in a 1998 opinion by the D.C. Circuit that allowed a volunteer/employee at multiple zoos bring suit, alleging an aesthetic harm, to enforce the USDA's statutory mandate to ensure humane conditions of captivity for primates. *See generally*, Animal Legal Defense Fund, Inc. v. Glickman, 154 F.3d 426 (D.C. Cir. 1998).

183. Citizens to End Animal Suffering & Exploitation, Inc. v. New England Aquarium, 836 F. Supp. 45 (D. Mass. 1993).

184. *Id.* at 48-49.

185. *Id.* at 49.

186. Tilikum *ex rel.* People for the Ethical Treatment of Animals, Inc. v. Sea World Parks & Entm't, Inc., 842 F. Supp. 2d 1259 (S.D. Cal. 2012).

held by SeaWorld in captivity in violation of the Thirteenth Amendment's prohibition on slavery.<sup>187</sup> The district court dismissed the case because it found that the whales did not have standing to bring suit.<sup>188</sup> The court reasoned that, in order to have standing, the plaintiff must assert a "case or controversy" that presents a legally cognizable claim.<sup>189</sup> It found that the Thirteenth Amendment was only intended to apply to humans, and thus, there was no case or controversy.<sup>190</sup>

However, the court's opinion did not foreclose the possibility of whales having standing to bring suits that would present legally cognizable claims. As such, a suit could be brought with a non-human plaintiff under the citizen-suit provision of the APA to challenge the conditions of captivity of marine mammals in the public display industry, so long as a court would entertain the argument that a non-human animal could be a "person suffering legal wrong because of an agency action."<sup>191</sup> Although this is not likely, such an expansion of the term "person" is certainly conceivable, particularly in light of the recent expansion of the definition to include non-human legal entities such as corporations and other business organizations.<sup>192</sup>

Expanding the standing doctrine to allow suits brought by captive marine mammals, under the APA's citizen-suit provision, would address the enforcement and animal-welfare concerns addressed above by allowing recourse to the judiciary for unjust captivity practices, while balancing the Court's concern about only entertaining "cases and controversies" within the meaning of Article III of the Constitution. Such a modest expansion would allow the individuals that are actually being harmed to bring suit (in an *ex rel.* capacity, of course) to challenge the conditions of their captivity. This expansion, in conjunction with the above-listed solutions,<sup>193</sup> would protect the interests of captive marine mammals.

Critics of this solution may argue that such an expansion of the modern standing doctrine would open up the floodgates of new lawsuits with non-human animals listed as plaintiffs. It is important to note, however, that this practice, i.e., naming non-human animals as plaintiffs, is already common in the enforcement

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187. *Id.* at 1260-61.

188. *Id.* at 1264.

189. *Id.*

190. *Id.*

191. *See* 5 U.S.C. § 702 (2012).

192. *See, e.g.,* *Burwell v. Hobby Lobby Stores, Inc.*, 134 S. Ct. 2751 (2014); *Citizens United v. Federal Election Comm'n*, 558 U.S. 310 (2010).

193. *Supra* Part III.



of the ESA.<sup>194</sup> It is important to note, however, that in the ESA cases the defendants often do not challenge the standing of the non-human animal listed as plaintiff.<sup>195</sup> However, the modest expansion of the standing doctrine that this Note proposes would not open the floodgates; rather, it would only allow legal challenges to inhumane conditions affecting captive marine mammals in light of their exceptional treatment and regulations by Congress (by providing more legal protections than most other groups of animals receive).

Critics may also argue that expanding standing under the citizen-suit provision of the APA would be impermissible expansion of the doctrine by unelected judges and would circumvent congressional intent. This may be a compelling argument if the law is to be given a textualist interpretation,<sup>196</sup> which would highlight that a marine mammal is not a “person” within the meaning of the APA, or even a purposivist<sup>197</sup> interpretation examining only the congressional intent in passing this single provision. Although these criticisms are valid and, depending on the court before which a case to expand standing might be brought, could be compelling, one could argue that such a modest expanding of standing to only the class of marine mammals that are protected by the MMPA would comport with the legislative intent in implementing the entire regulatory scheme governing the captivity of marine mammals (which was put into place after the most recent amendment of the APA’s citizen-suit provision).<sup>198</sup> Because such an expansion of standing would only be for the benefit of marine mammals, for whose protection Congress has enacted a comprehensive regulatory scheme,<sup>199</sup> rather than for all nonhuman animals, this would be in line with Congress’s intent in enacting the scheme.

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194. *See, e.g.,* Mt. Graham Red Squirrel v. Yeutter, 930 F.2d 703 (9th Cir. 1991); Palila v. Haw. Dept. of Land & Natural Resources, 852 F.2d 1106 (9th Cir. 1988); Northern Spotted Owl v. Lujan, 758 F. Supp. 621 (W.D. Wash. 1991); Northern Spotted Owl v. Hodel, 716 F. Supp. 479 (W.D. Wash. 1988).

195. *Citizens to End Animal Suffering & Exploitation, Inc. v. New England Aquarium*, 836 F. Supp. 45, 49 (D. Mass. 1993).

196. “Textualists” generally turn only to the text of a statute or regulation, attempting to reason away any ambiguities in the plain language with a variety of semantic devices to discern the apparent intent of Congress. They are loathe to turn to the legislative history of the law, unlike “purposivists.” *See generally* JOHN F. MANNING & MATTHEW C. STEPHENSON, *LEGISLATION AND REGULATION* 49-66 (2010).

197. “Purposivists” generally look to the plain language of the provision first, then resolve ambiguities by turning to the legislative history in an effort to determine congressional intent. *See generally, id.* at 67-79.

198. *See* *Keifer & Keifer v. Reconstruction Fin. Corp.*, 306 U.S. 381, 389 (1939) (“The Congressional will must be divined, and by a process of interpretation which, in effect, is the ascertainment of policy immanent not merely in the single statute . . . but in a series of statutes . . .”); *see also* JOHN F. MANNING & MATTHEW C. STEPHENSON, *LEGISLATION AND REGULATION* 48 (2010).

199. *See supra* Part I.B.

## VI. CONCLUSION

The web of regulations that cover the marine mammal public display industry is complicated: from capture to display, any particular animal could be regulated by up to five different sets of regulations<sup>200</sup> and enforced and overseen by five different entities.<sup>201</sup> This web of regulations, intended to protect marine mammals and conserve them for future generations to enjoy, leaves the marine mammal public display industry to regulate itself with regard to education requirements for its members' programs and qualifications of trainers. Industry self-regulation in the realm of educational materials has led to the dissemination of inaccurate materials that distort the consequences of captivity for these marine mammals and serve to justify the practices of captivity by painting the animals' natural environments as more dangerous to the animals than captivity. The self-regulation of husbandry practices has led to the injuries of countless trainers and the deaths of three. This is a failure on the part of the regulating agencies by giving regulatory discretion to entities that have adverse interests to the creatures which the regulations are intended to protect.

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200. *E.g.*, International Whaling Convention, Marine Mammal Protection Act, Magnuson-Stevens Act, Endangered Species Act, and the Animal Welfare Act.

201. International Whaling Commission, National Oceanic and Atmospheric Administration (likely by either the Marine Mammal Commission or the National Marine Fisheries Service), the United States Department of Agriculture (likely by the Fish and Wildlife Service), and the Animal and Plant Health Inspection Service., respectively.