

Policy Action	Cap & Trade	Employment Impact	Household Impact
Science Applications International Corporation (SAIC)		By 2030 Washington State jobs decline by 41,456 under the low cost case and by 56,459 under the high cost case (assuming 42% reduction below 2005 levels). <sup>1</sup>	Washington State would see disposable household income reduced by \$121 to \$256 per year by 2020 and \$696 to \$1,213 by 2030. <sup>2</sup>  By 2030, higher energy prices mean that low income families in Washington State (with average incomes of \$14,973) will spend between 12.4% and 12.8% of their income on energy compared to a projected 11.5% without [Cap and Trade]. <sup>3</sup>  Washington State would see disposable household income reduced by \$1,083 to \$3,512 per year by 2020 and \$4,497 to \$8,200 by 2030. <sup>5</sup>
Science Applications International Corporation (SAIC)		By 2020 Washington State jobs decline by 23,668 to 35,602 jobs (assuming 15% reduction below 2005 levels).  By 2030 Washington State jobs decline by 61,519 to 81,891 jobs (assuming 30% reduction below 2005 levels). <sup>4</sup>	By 2020, higher energy prices mean that low income families in Washington State (with average incomes of \$14,973) will spend between 16% and 18% of their income on energy compared to a projected 14% without [Cap and Trade]. Others on fixed incomes, such as the elderly will also suffer disproportionately. <sup>6</sup>  Some studies suggest that Cap and Trade will result in significant net savings; others suggest that it will diminish disposable income. <sup>7</sup>  There is no consensus among studies as to whether cap and trade would increase or decrease personal income. <sup>8</sup>
Leidos			California will suffer other negative impacts, including loss of manufacturing expertise and increased cost of living resulting from higher fuels cost. <sup>10</sup>  Total reduction in personal income of \$2.697 billion. <sup>12</sup>  Total reduction in personal income of \$5.71 billion. <sup>14</sup>  Total reduction in per capita disposable income of \$302.54. <sup>15</sup>
The Boston Consulting Group		CA could lose between 28,000 to 51,000 jobs by 2020 as a result of AB 32-related regulation. <sup>9</sup>	
Heritage Foundation		Washington State jobs decline by 25,718. <sup>11</sup>	
Beacon Hill Institute		Washington State jobs decline by 18,292. <sup>13</sup>	

- 1 Science Applications International Corporation (SAIC), Analysis of the Waxman-Markey Bill, August 2009.
- 2 Id.
- 3 Id.
- 4 Science Applications International Corporation (SAIC), Analysis of the Lieberman-Warner Climate Security Act, March 2008.
- 5 Id.
- 6 Id.
- 7 Leidos for Climate Legislative and Executive Workgroup (CLEW), November 2013
- 8 Id.
- 9 Boston Consulting Group, Understanding the Impact of AB 32, June 2012.
- 10 Id.
- 11 Heritage Foundation, Impact of the Waxman-Markey Climate Change Legislation on the States, August 2009.
- 12 Id.
- 13 The Beacon Hill Institute at Suffolk University, The Economic Analysis of the Western Climate Initiative's Regional Cap-and-Trade Program, March 2009.
- 14 Id.
- 15 Id.

<b>Policy Action</b>	<b>Employment Impact</b>	<b>Household Impact</b>
<p><b>Carbon Tax</b> British Columbia Ministry of Finance (Cited by Leidos)</p>		<p>BC tax of \$30 per ton yielded gasoline and diesel costs at \$0.227 and \$0.265 per gallon, respectively.<sup>1</sup></p> <p>British Columbia directs revenues to programs to mitigate impacts to low-income households, ratepayers and reduces other provincial taxes on individuals and corporations.</p>
<p>Leidos</p>		<p>Tax of \$10, \$30, and \$50 per ton CO<sub>2</sub> would result in \$0.09, \$0.27, and \$0.44, respectively, per gallon of gasoline.<sup>2</sup> A \$30/ton tax would add about \$6 per car fill-up, or \$85 to a 500-gal propane tank fill-up.<sup>3</sup></p>
<p>Industrial Customers of Northwest Utilities</p>		<p>A \$30 per ton carbon tax will increase electricity rates in Washington by an average of 11%, resulting in \$663 million in increased annual expenditures.<sup>4</sup></p> <p>Electricity rates for industrial users will increase 17.9% and expenditures will increase by \$395 million.</p>
<p>Institute for Energy Research (Cited by Leidos)</p>	<p>After Australia's carbon tax (set at approximately \$22 USD per ton of CO<sub>2</sub>) took effect, unemployment increased by 10%.<sup>5</sup></p>	
<p>U.S. Congressional Budget Office</p>		<p>A \$28 per ton price of carbon would increase household costs by 2.5% of after-tax income for average households in the lowest one-fifth of the national income distribution. The same price on carbon would increase household costs by less than 1% of after-tax income for average households in the highest one-fifth of the national income distribution.<sup>6</sup></p> <p>A tax of \$20 per ton of carbon would equal 1.8% of pre-tax household income for those in the lowest one-fifth of the income distribution, and 0.7% in the highest one-fifth of household incomes.</p>

<sup>1</sup> British Columbia Ministry of Finance, How the Carbon Tax Works. Accessed August 2013 at: <http://www.fin.gov.bc.ca/tbs/tp/climate/A.4.htm>

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<sup>2</sup> Calculated directly from CO2 Emissions Coefficients reported by EIA, [http://www.eia.gov/environment/emissions/co2\\_vol\\_mass.cfm](http://www.eia.gov/environment/emissions/co2_vol_mass.cfm)

<sup>3</sup> Calculations performed by LEIDOS for Climate Legislative and Executive Workgroup (CLEW).

<sup>4</sup> ICNU Testimony submitted to CLEW, October 30, 2013.

<sup>5</sup> Robson, A., [Australia's Carbon Tax: An Economic Evaluation](http://www.instituteforenergyresearch.org/australias-carbon-tax/). Institute for Energy Research. Accessed September 2013 at:

<http://www.instituteforenergyresearch.org/australias-carbon-tax/>

<sup>6</sup> U.S. Congressional Budget Office, [Effects of a Carbon Tax on the Economy and the Environment](#), May 22, 2013. Estimated effects listed do not include economic effects related to the use of tax revenues raised by the carbon tax.

<b>Policy Action</b>			
<b>Feed-In Tariff</b>	<b>Employment Impact</b>	<b>Household Impact</b>	<b>Rate Impact</b>
Leidos	Increase of 20,000 jobs from the Ontario program (Ontario government/Ministry of Energy). Increase of 55,000 jobs in the California program (UC Berkeley).	"Average German household prices were the second highest in the European Union behind Denmark as of November 2012." ... "In contrast to household bills, German industrial power prices are below the EU average, Eurostat data shows." The approach of calculating the EEG levy based on the gap between the wholesale power price and the higher fixed FIT has issues. (Business Spectator). <sup>1</sup>	Germany's FIT cost consumers a 3% rate increase in the lifetime of the program, with a 5% increase in 2008 alone, averaging \$2.66 to \$8.00 per month. <sup>2</sup> No cost increase from solar FIT, but for wind, "an increase in electricity prices of 0.48 cents per kWh, approx.. 3% of the average retail price in German." (Klein). <sup>3</sup>
Division of Energy Planning Vermont Department of Public Service <sup>4</sup>	FIT "provide a temporary boost to employment (especially construction and related trades)... The impacts quickly diminish as projects are completed..." "Spike in employment" occurs during construction "followed by job losses in following years as above market FIT costs diminish consumer spending and increase the cost of production." "All Vermont sectors are not treated alike." "In essence jobs are created in one sector of the Vermont economy as the expense [of] others."	"For households, the economic impact is largely through an income effect whereby households reduce expenditures on 'all other' items to pay for a rising electric bill." Industrial and commercial ratepayers "will pay higher electric bills which raise their cost of production and leaves them disadvantaged relative to out-of-state competition."	"To the extent the FIT represents an 'above market cost'; the FIT will increase the cost of electricity to households and businesses."
SmartGridNews.com <sup>5</sup>		Unless something is done in Germany, electricity will become "a luxury good" in Germany.	

<p>The New York Times<sup>6</sup></p>		<p>Der Spiegel claims German consumers will be forced to pay \$26 billion for renewable energy in 2013. The same amount of electricity purchased on the market would have cost about \$4 billion.</p> <p>"German families are being hit by rapidly increasing electricity rates, to the point where growing numbers of them can no longer afford to pay the bill."</p> <p>"A new phrase, 'energy poverty,' has entered the lexicon."</p>	
			<p>Government has shielded about 700 companies from increased energy costs to protect their competitive position in the global economy.</p> <p>"Industrial users still pay substantially more for electricity here than do their counterparts in Britain or France, and almost three times as much as those in the United States, according to a study by the German industrial giant Siemens."</p>

<sup>1</sup> The growing cost of Germany's feed-in tariffs. Web Article from [businessspectator.com.au/article/2013/2/21/policy-politics/growing-cost-germanys-feed-tariffs](http://www.businessspectator.com.au/article/2013/2/21/policy-politics/growing-cost-germanys-feed-tariffs), Feb, 2013. Accessed Aug. 13, 2013.

<sup>2</sup> Germany: NARUC. *Feed-In Tariffs: Frequently Asked Questions for State Utility Commissions*. June 2010.

<sup>3</sup> C.A. Klein, "Renewable Energy at What Cost? Assessing the Effect of Feed-In Tariff Policies on Consumer Electricity Prices in the European Union" The Georgetown Public Policy Review. (2013), <http://gppreviewdotcom.files.wordpress.com/2013/02/klein-thesis-ed.pdf>

<sup>4</sup> *The Economic Impacts of Vermont Feed in Tariffs by Division of Energy Planning*, Vermont Department of Public Service (December 2009).

<sup>5</sup> "The World is watching: The German revolt against renewables", [SmartGridNews.com](http://SmartGridNews.com), Sept. 24, 2013.

<sup>6</sup> "Germany's Effort at Clean Energy Proves Complex" New York Times, Sept. 18, 2013.

Policy Action	Employment Impact	Rate Impact	Customer Impact	Utility Impact
<b>Initiative 937 (Energy Independence Act)</b> Chelan Public Utility District			The cost associated with Initiative 937 (I-937) compliance, including labor directly associated with program implementation, incentives and marketing of those programs to customers is \$8.6 million for 2010-2013. This expenditure allowed Chelan PUD to acquire all cost-effective conservation as required under I-937. <sup>1</sup>	Chelan PUD paid the Washington State Auditor's Office (SAO) approximately \$96,000 between April 2012 and November 2013 to perform an audit of our program. This amount includes direct costs to the utility and planning costs which the SAO allocated to the 12 qualifying utilities. In addition, the utility's conservation staff spent 500 hours of staff time supporting the audit process. <sup>2</sup>
<b>Tacoma Power</b>				<b>Renewable Energy Credits</b> In 2012, Tacoma Power spent \$1,560,250 to comply with the renewable portfolio standard (RPS) in I-937. <sup>3</sup>  Between 2012 and 2014, Tacoma Power spent on average \$1,500,000/year purchasing renewable energy

<sup>1</sup> Chelan Public Utility District, Requested Data Related to Implementing I-937 and Feed-in Tariffs Impacts, November 20, 2013.

<sup>2</sup> Id.

<sup>3</sup> Tacoma Power, I-937 Conservation Report to the State for 2010- 2011 and Renewable Energy Report for 2012, May 2012.

<b>Policy Action</b>				
<b>Initiative 937 (Energy Independence Act)</b>	<b>Employment Impact</b>	<b>Rate Impact</b>	<b>Customer Impact</b>	<b>Utility Impact</b>
				<p>credits (REC) to comply with I-937.<sup>4</sup></p> <p>Projecting into the future, Tacoma Power estimates the following expenditures for RECs:</p> <p>(1) In 2015, the utility will spend \$2,100,000;</p> <p>(2) Between 2016 and 2018, \$4,100,000; and</p> <p>(3) In 2019, \$3,500,000.<sup>5</sup></p> <p><b>Cost-Effective Conservation</b></p> <p>Tacoma Power spent to comply with the conservation requirements under I-937 the following:</p> <p>(1) In 2010, \$14,228,003;</p> <p>(2) In 2011, \$14,183,648; and</p> <p>(3) In 2012, \$14,724,625.</p> <p>For 2013, Tacoma Power has budgeted \$14,725,113 for</p>

<sup>4</sup> Tacoma Power, CLEW Report Cost of I-937 Compliance, December 2013.

<sup>5</sup> Id.



Policy Action	Employment Impact	Rate Impact	Customer Impact	Utility Impact
<b>Initiative 937 (Energy Independence Act)</b>  Washington Policy Center/The Beacon Hill Institute Study	The RPS part of I-937 will reduce employment in Washington state by up to 11,885 jobs by 2020, or twice the number of jobs currently in utilities and mining industries combined. <sup>7</sup>	Washington's current RPS will increase energy rates by about 13% by 2020. <sup>8</sup>	The RPS will cost: (1) The average household an additional \$170/year, with low-income families paying a heavier relative cost; (2) For commercial businesses by an expected \$1,135/year; and (3) For industrial businesses by an expected \$13,225/year. <sup>9</sup>  I-937 might generate small economic benefits, but Washington electricity customers will pay higher rates, face fewer employment opportunities, and watch investment flee to other states.	conservation compliance purposes. <sup>6</sup>

<sup>6</sup> Id.

<sup>7</sup> Joint study by The Beacon Hill Institute and Washington Policy Center's Center for the Environment, Policy Brief: The Economic Impact of Washington State's Renewable Portfolio Standard, April 2013.

<sup>8</sup> Id.

<sup>9</sup> Id.

Policy Action	Low Carbon Fuel Standard	Employment Impact	Household Impact
Boston Consulting Group (cited by Leidos)	California LCFS and Cap & Trade: increase cost of transportation fuels \$0.14 to 0.69 per gal. <sup>2</sup>	California LCFS and Cap & Trade: estimated job loss of 28,000-51,000. <sup>1</sup>	California LCFS and Cap & Trade: increase cost of transportation fuels \$0.14 to 0.69 per gal. <sup>2</sup>
Charles River Associates	Nation-wide LCFS: increase retail price of transportation fuels from 90% to 170% by 2025. <sup>4</sup>	Nation-wide LCFS: estimated national job loss of 2.3 to 4.5 million by 2025. <sup>3</sup>	Nation-wide LCFS: increase retail price of transportation fuels from 90% to 170% by 2025. <sup>4</sup>
Oregon Department of Environmental Quality (cited by Leidos)	Increase of 800-29,000 jobs over 10 years based on different scenarios. <sup>5</sup>	Increase of 800-29,000 jobs over 10 years based on different scenarios. <sup>5</sup>	0-2% reduction in net fuel spending. <sup>6</sup>
California Air Resources Board (cited by Leidos)	\$0-0.08 savings per gallon of gas (CARB). <sup>7</sup>	\$0-0.08 savings per gallon of gas (CARB). <sup>7</sup>	\$0-0.08 savings per gallon of gas (CARB). <sup>7</sup>
California Trucking Association	California LCFS: estimated job loss of 616,922 between 2015 and 2020. <sup>8</sup>	California LCFS: estimated job loss of 616,922 between 2015 and 2020. <sup>8</sup>	California LCFS: increase retail diesel prices 50% by 2020. <sup>9</sup>
Pacific Ethanol			"The LCFS adds a premium price to the low carbon ethanol we produce and sell in California and supports our efforts to expand production, diversify our feedstocks and develop new technologies to further lower the carbon intensity of ethanol we produce." <sup>10</sup>

<sup>1</sup> Boston Consulting Group, Understanding the Impact of AB 32, June 19, 2012 (prepared for Western States Petroleum Association).

<sup>2</sup> Id.

<sup>3</sup> Charles River Associates, Economic and Energy Impacts Resulting from a National Low Carbon Fuel Standard, June 2010 (prepared for the Consumer Energy Alliance)

<sup>4</sup> Id.

<sup>5</sup> Leidos, Economic Impact Summary Significant Programs, November 5, 2013, footnote 47 (citing Oregon Department of Environmental Quality data): "LCFS creates 800-29,000 jobs over 10 years, increasing income in Oregon between \$60 and \$2,630 million over 10 years. Overall, the six scenarios modeled in the analysis sponsored by the Oregon DEQ involving in-state production of biofuels (A through G and E through G) have fairly similar gross state product (GSP) impacts, ranging from approximately \$900 million to about \$1.25 billion in additional economic activity."

<sup>6</sup> Id., footnote 54, quoting 2012 Oregon Department of Energy report: "Reductions in conventional fuel purchase offset increases in spending on lower-carbon fuels. All scenarios showed some reduction in fuel expenditure, though in most cases the savings is well below 1% of the baseline expenditure of \$86 billion. In Scenario D, which emphasized a switch to electricity and natural gas (both of which offered significant savings per mile traveled), the fuel savings approached 2% of the baseline."

<sup>7</sup> Id., footnote, 53, citing California Air Resources Board.: "According to Leidos, ARB estimated that the policy would result in a net savings over the life of the policy, which would amount to a \$0 - \$0.08 per gallon savings if passed entirely to the consumer. ARB acknowledged that the savings are highly dependent on the future price of fossil fuels, availability of lower-carbon intensity fuels, and the economic recovery. There will be an estimated overall savings in the state of \$11 billion over the 10-year period."

<sup>8</sup> California Trucking Association, The Impact of the Low Carbon Fuel Standard and Cap and trade Programs on California Retail Diesel Prices, April 25, 2012 (prepared by Stonebridge Associates, Inc.)

<sup>9</sup> Id.

<sup>10</sup> Pacific Ethanol, CEO Responds to EPA's Proposed Rules for 2014 Renewable Fuels Standard Targets, November 20, 2013, at [http://www.pacificethanol.net/site/\\_documents/news/EPARVO.pdf](http://www.pacificethanol.net/site/_documents/news/EPARVO.pdf).

Policy Action			
Zero Emission Vehicles	Employment Impact	Business Impact	Household Impact
Leidos Task 2 Report Leidos Economic Impact Summary Chart (Nov. 5, 2013)	Increase of 80-1,000 jobs per auto plant (Tesla) based on actual and projected data from WA and CA. <sup>1</sup> OR's electric vehicle cluster has created 1,500 jobs. <sup>2</sup>	\$2.3 billion in cost to manufacturers over 15 years from 2020 to 2035. <sup>3</sup> Dealers forced to assume risk of high-priced inventory that may not sell. <sup>4</sup>	
Washington State Auto Dealers Association		Consumer demand will only be a small fraction of what would be needed to meet a ZEV mandate; therefore, dealers would be placed in jeopardy if forced to carry ZEV inventory. <sup>5</sup>	
Association of Global Automakers & Alliance of Automobile Manufacturers	California provides a vast array of incentives for electric vehicles and electric vehicle manufacturing that are not available in Washington. Moreover, the Tesla manufacturing plant in Fremont was an existing active automobile manufacturing facility with thousands of skilled automotive workers that was acquired by Tesla, none of which exists in Washington. <sup>6</sup>		Using CARB incremental per-vehicle costs, the total costs of the ZEV mandate to Washington dealers, consumers, government, and automakers, will exceed \$2 billion dollars between 2018 and 2025. <sup>7</sup>

<sup>1</sup> Leidos, Economic Impact Summary Significant Programs, November 5, 2013 (chart prepared for CLEW) (citing in footnote 57 jobs created by Tesla plant in Fremont, CA and 80 jobs that currently exist in SGL/BMW Automotive Carbon Fiber plant in Moses Lake, WA); Leidos, Evaluation of Comprehensive GHG Emissions Reduction Programs Outside of Washington, Final Report (Task 2 Final Report), September 20, 2013.

<sup>2</sup> Leidos, Economic Impact Summary Significant Programs, November 5, 2013 (citing 2013 Portland State University study of Oregon's electric vehicle industry).

<sup>3</sup> Leidos, Task 2 Final Report.

<sup>4</sup> Id.

<sup>5</sup> Washington State Auto Dealers Association, Comments to CLEW, undated.

<sup>6</sup> Association of Global Automakers & Alliance of Automobile Manufacturers, Comments to CLEW, October 30, 2013.

<sup>7</sup> Id. (citing California Environmental Protection Agency, Air Resources Board, Initial Statement of Reasons, Advanced Clean Cars, 2012 Proposed Amendments to the California Zero Emission Vehicle Program Regulations at <http://www.arb.ca.gov/regact/2013/cfo13isor.pdf> (December 7, 2011)).