

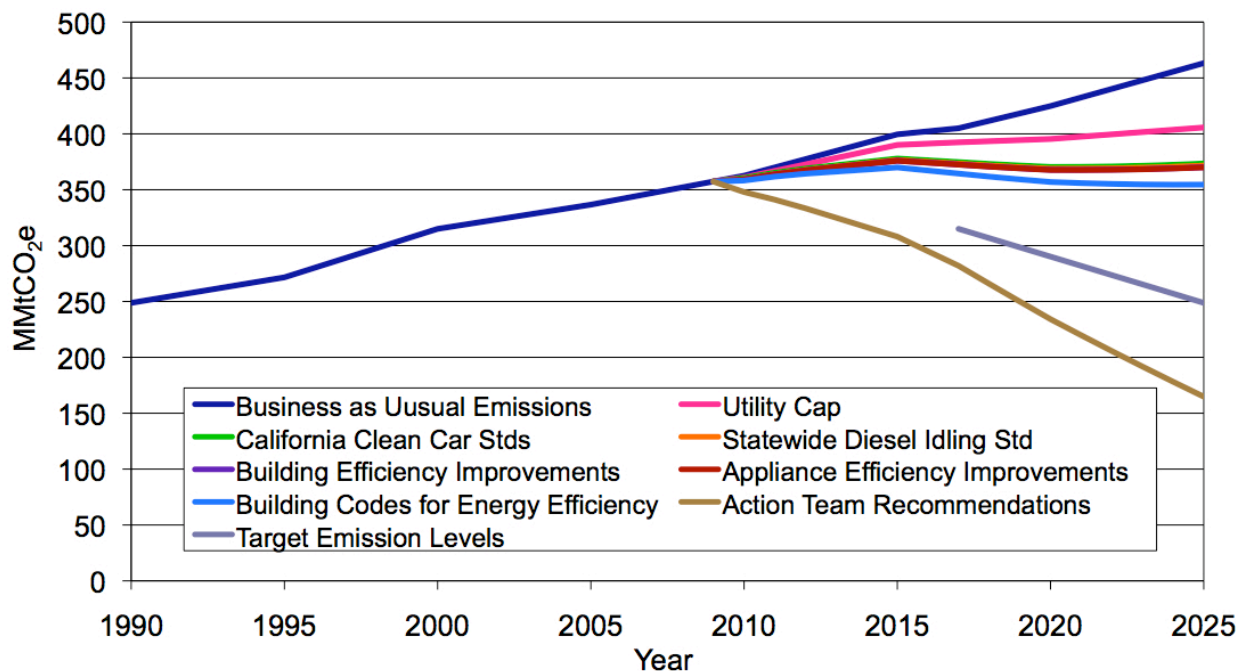


Florida Energy and Climate Action Plan Summary

The *Florida Energy and Climate Action Plan* was completed in October 2008 in response to Governor Charlie Crist's Executive Order 07-128. It tasked the *Governor's Energy and Climate Action Team* with creating a comprehensive Florida Energy and Climate Action Plan to meet or exceed statewide targets for greenhouse gas (GHG) emissions reductions. Florida Department of Environmental Protection Secretary, Michael Sole, chaired the Action Team.

Coupled with other recent actions by the state and federal government, the 50 new policies in the Plan can reduce state GHG emissions to 20 percent below 1990 levels by 2020 at a net economic savings of \$28 billion, provide net savings of 53.5 billion gallons of petroleum, 200.2 million short tons of coal, and 6.4 billion cubic feet of natural gas, according to estimates reviewed and approved by the Action Team. Macroeconomic analysis of 28 measures in the Plan using the REMI model indicates it would expand State Gross Product by \$38 billion and create 148,000 new jobs on a net cumulative basis by 2025. The Plan also provided numerous recommendations to evaluate and respond through early actions to impending climate change impacts on the state's economy, resource-based industries, infrastructure, buildings, and public health.

GHG Reduction Potential from Florida Recent and Proposed Actions (CCS, 2008)



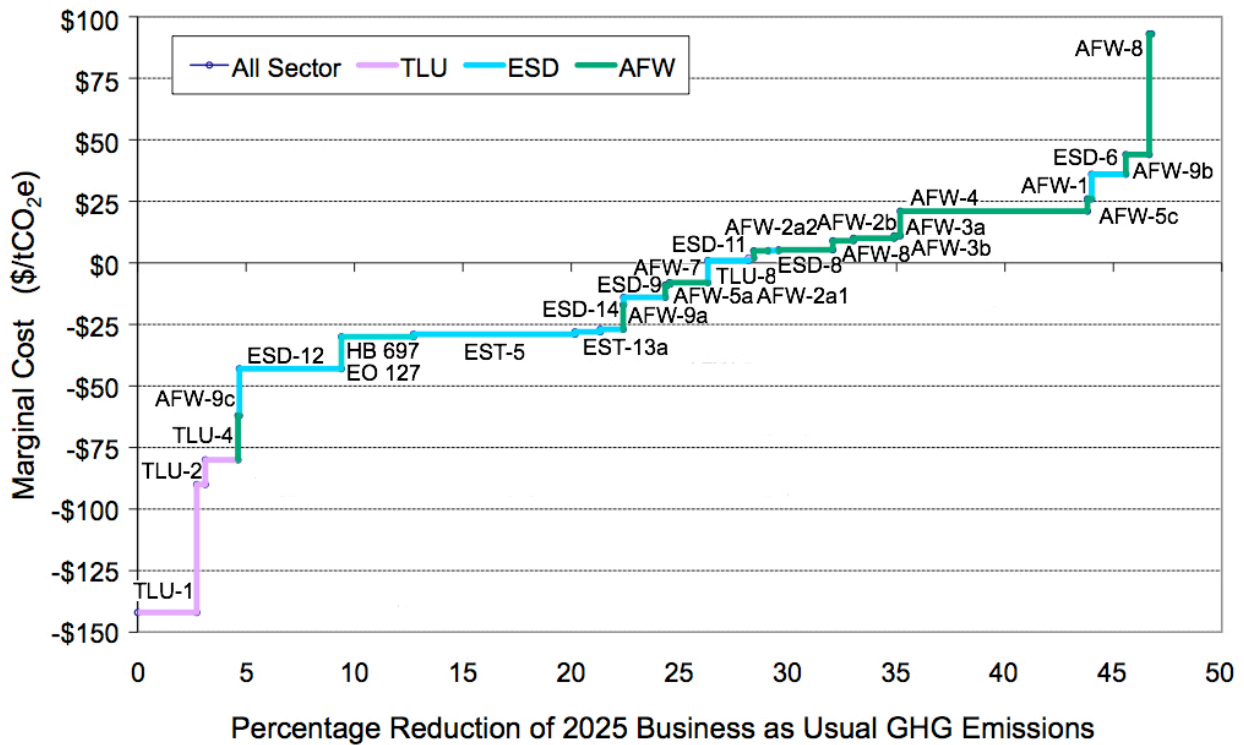
MMtCO_{2e} = million metric tons of carbon dioxide equivalent; Note: The projections are based on gross emissions from energy consumption within Florida.

The [Center for Climate Strategies](#) (CCS) provided facilitation and technical support to the 27 member Action team and 122 Technical Work Groups members. Members served on Technical Work Groups that focused on policy development for all sectors of the Florida economy, including:

- [Agriculture, Forestry and Waste Conservation](#)
- [Clean and Renewable Energy \(Heat and Power Generation\)](#)
- [Energy Conservation and Efficiency \(Heat and Power Consumption\)](#)
- [Transportation and Land Use Improvements](#)

The cost curve below shows the effectiveness of many of the specific policy options in these sectors (represented by each color coded and labeled line segment) in terms of their savings or costs and their contribution to reducing GHGs. The Energy Supply and Demand (ESD) measures include both renewable generation and energy efficiencies. (See Summary Tables.)

Estimated Costs and Savings for Florida Energy and Climate Actions (CCS, 2008)



\$/tCO₂e = cost per ton carbon dioxide equivalent; TLU = Transportation and Land Use; AFW = Agriculture, Forestry and Waste Management; ESD = Energy Supply and Demand

The Florida Energy and Climate Action Plan is one of [30 such state plans](#) completed or underway by U.S. states. Florida’s Plan includes an emissions target, a comprehensive set of sector-based policies and measures, and a multi state cap-and-trade program to reduce GHGs, and other actions to address adaptation to changing climate. Its mitigation measures are consistent with national climate policy proposed in the [U.S. Congress](#) and the Administration.

Summary Tables of Sector-Based Recommendations

The tables below list Florida's recommended policies by sector/Technical Work Group and show results of analyses quantifying GHG reductions, costs or savings, cost effectiveness and, in some cases, fuel savings. Some recommendations were not quantified due to data limitations or other factors. Analysis was conducted by CCS according to specifications by Technical Work Groups.

| Energy Supply and Demand (ESD) | | | | | | |
|--|--|---------------------------------------|--------------|-----------------|--|--|
| Policy No. | Policy Recommendation | GHG Reductions (MMtCO ₂ e) | | | Net Present Value 2009–2025 (Million \$) | Cost-Effectiveness (\$/tCO ₂ e) |
| | | 2017 | 2025 | Total 2009–2025 | | |
| ESD-5 | Promoting Renewable Electricity through Renewable Portfolio Standard (RPS), incentives and barrier removal (20% by 2020) | 17 | 34.5 | 319 | –\$9,274 | –\$29 |
| ESD-6 | Nuclear Power | 0.0 | 7.3 | 49.4 | \$1,782 | \$36 |
| ESD-7 | Integrated Resource Planning (IRP) | Not quantified | | | | |
| ESD-8 | Combined Heat and Power (CHP) Systems | 1.8 | 2.2 | 26.5 | \$126 | \$5 |
| ESD-9 | Power Plant Efficiency Improvements | 8.4 | 8.9 | 111.4 | –\$1,541 | –\$14 |
| ESD-11 | Landfill Gas-To-Energy (LFGTE) | 3.7 | 8.7 | 64.7 | \$79 | \$1 |
| ESD-12 | Demand-Side Management (DSM)/Energy Efficiency Programs, Funds, or Goals for Electricity | 13.0 | 21.8 | 201.4 | –\$8,566 | –\$43 |
| ESD-13a | Energy Efficiency in Existing Residential Buildings | 3.4 | 5.4 | 50.4 | –\$1,432 | –\$28 |
| ESD-14 | Improved Building Codes for Energy Efficiency | 0.0 | 4.9 | 9.9 | –\$265 | –\$27 |
| ESD-15 | Training and Education for Building Operators and Community Association Managers | Not quantified | | | | |
| ESD-17 | Consumer Education Programs | Not quantified | | | | |
| ESD-23 | Decoupling | Not quantified | | | | |
| | Building Codes for Energy Efficiency (HB 697 and Executive Order 127) | 8.0 | 15.4 | 136.5 | –\$4,082 | –\$30 |
| Sector Totals | | 47.4 | 93.6 | 832.8 | –\$19,090 | –\$23 |
| Sector Totals After Adjusting for Overlaps (see Note 3) | | 44.4 | 106.4 | 841.3 | –\$16,143 | –\$19 |
| Reductions from Recent Actions | | 8.0 | 15.4 | 136.5 | –\$4,082 | –\$30 |
| Sector Totals, including recent actions and adjustment for overlaps | | 52.4 | 121.8 | 977.8 | –\$20,226 | –\$21 |

KEY: MMtCO₂e = million metric tons carbon dioxide equivalent; \$/tCO₂e = dollars per ton carbon dioxide equivalent, NQ = not quantified. Negative numbers indicate *cost savings*.

| Energy Supply and Demand (ESD) Fuel Savings | | | | |
|--|--|---|----------------------------------|-----------------------------|
| Policy No. | Policy Recommendation | Energy Security Fuel Savings (Saved 2009 - 2025) | | |
| | | Coal (million short tons) | Natural gas (billion cubic feet) | Petroleum (million gallons) |
| ESD-5 | Promoting Renewable Electricity through Renewable Portfolio Standard (RPS), incentives and barrier removal (20% by 2020) | 37 | 4,092 | 654 |
| ESD-6 | Nuclear Power | 4 | 733 | 61 |
| ESD-7 | Integrated Resource Planning (IRP) | Not quantified | | |
| ESD-8 | Combined Heat and Power (CHP) Systems | 5 | 198 | 431 |
| ESD-9 | Power Plant Efficiency Improvements | 14 | 1,383 | 241 |
| ESD-11 | Landfill Gas-To-Energy (LFGTE) | 0 | 27 | 4 |
| ESD-12 | Demand-Side Management (DSM)/Energy Efficiency Programs, Funds, or Goals for Electricity | 19 | 2,266 | 326 |
| ESD-13a | Energy Efficiency in Existing Residential Buildings | 6 | 650 | 100 |
| ESD-14 | Improved Building Codes for Energy Efficiency | 0 | 171 | 4 |
| ESD-15 | Training and Education for Building Operators and Community Association Managers | Not quantified | | |
| ESD-17 | Consumer Education Programs | Not quantified | | |
| ESD-23 | Decoupling | Not quantified | | |
| Recent Actions | | | | |
| | Building Codes for Energy Efficiency (HB 697 and Executive Order 127) | 16 | 1,750 | 279 |
| Sector Totals | | 85 | 9,520 | 1,822 |
| Sector Totals After Adjusting for Overlaps (see Note 3) | | 172 | 6,394 | 68 |
| Reductions from Recent Actions | | 16 | 1,750 | 279 |
| Sector Totals, including recent actions and adjustment for overlaps | | 188 | 8,144 | 347 |

| Transportation and Land Use (TLU) | | | | | | | |
|-----------------------------------|--|---|--------------|-----------------|--|--|--|
| Policy No. | Policy Recommendation | GHG Reductions (MMtCO ₂ e) | | | Net Present Value 2009–2025 (Million \$) | Cost-Effectiveness (\$/tCO ₂ e) | Energy Security Fuel Savings (Gallons Saved 2009–2025) (million gallons) |
| | | 2017 | 2025 | Total 2009–2025 | | | |
| TLU-1 | Develop & Expand Low-GHG Fuels | 6.20 | 12.62 | 106.41 | –\$15,161 | –\$142 | 37,290 |
| TLU-2 | Low Rolling Resistance Tires and Other Add-On Technologies | 0.80 | 1.84 | 13.99 | –\$1,259 | –\$90 | 1,665 |
| TLU-3 | Smart Growth Planning | Not Quantified Separately; Included in Other Analyses | | | | | |
| TLU-4 | Improving Transportation System Management (TSM) | 3.94 | 6.98 | 63.91 | –\$5,106 | –\$80 | 7,858 |
| TLU-5&6 | Land Use Planning & Increasing Choices in Transportation Modes | 1.77 | 3.54 | 28.29 | NQ | NQ | 3,200 |
| TLU-7 | Incentive Programs for Increased Vehicle Fleet Efficiency | 0.84 | 1.56 | 13.14 | NQ | NQ | 1,564 |
| TLU-8 | Freight Movement Efficiencies | 0.59 | 1.10 | 11.52 | \$21 | \$2 | 1,302 |
| | Sector Totals | 14.14 | 27.64 | 237.26 | –\$21,505 | –\$91 | 52,879 |
| | Sector Total After Adjusting for Overlaps | 12.73 | 25.14 | 214.35 | –\$18,400 | –\$86 | 48,786 |
| | Reductions from Recent Actions | 19.10 | 34.11 | 307.24 | | | |
| | Sector Total Plus Recent Actions | 31.83 | 59.25 | 521.59 | | | |

| Agriculture, Forestry and Waste Management (AFW) | | | | | | | |
|--|---|---------------------------------------|------|-----------------|--|--|--|
| Policy No. | Policy Recommendation | GHG Reductions (MMtCO ₂ e) | | | Net Present Value 2009–2025 (Million \$) | Cost-Effectiveness (\$/tCO ₂ e) | Energy Security Fuel Savings |
| | | 2017 | 2025 | Total 2009–2025 | | | |
| AFW-1 | Forest Retention—Reduced Conversion of Forested to Non-Forested Land Uses | 0.5 | 0.6 | 7.2 | \$186 | \$26 | |
| AFW-2 | Afforestation and Restoration of Non-Forested Lands | | | | | | |
| | A. Forested Landscape | | | | | | |
| | Afforestation | 1.6 | 3.1 | 28 | \$134 | \$4.9 | |
| | Reforestation | 6.1 | 11.6 | 104 | \$555 | \$5.3 | |
| | B. Urban Forestry | 4.6 | 8.7 | 78 | \$759 | \$10 | 3.5 million short tons coal, or 76,000 cubic ft. natural gas |

| Agriculture, Forestry and Waste Management (AFW), continued | | | | | | | | |
|---|---|------|------|-----|---------|-------|---|--|
| AFW-3 | Forest Management for Carbon Sequestration | | | | | | | |
| | A. Pine Plantation Management | 0.5 | 0.9 | 7.9 | \$84 | \$11 | | |
| | B. Non-Federal Public Land Management | 0.3 | 0.4 | 3.9 | \$41 | \$11 | | |
| AFW-4 | Expanded Use of AFW Biomass Feedstocks for Electricity, Heat, and Steam Production | 21 | 40 | 361 | \$7,432 | \$21 | 22 million short tons coal or 486,000 cubic feet natural gas | |
| AFW-5 | Promotion Farming Practices with GHG Benefits | | | | | | | |
| | A. Soil Carbon Management | 0.5 | 0.9 | 8.0 | -\$74 | -\$9 | 5 million gallons of diesel fuel | |
| | B. Land-Use Management Promoting Permanent Cover | N/Q | | | | | | |
| | C. Nutrient Management | 0.2 | 0.3 | 2.6 | \$68 | \$26 | | |
| | D. Improved Harvesting Methods to Achieve GHG Benefits | N/Q | | | | | | |
| AFW-6 | Reduce the Rate of Conversion of Agricultural Land and Open Green Space to Development | 0.2 | 0.5 | 4.2 | \$394 | \$93 | | |
| AFW-7 | In-State Liquid/Gaseous Biofuels Production | 4.0 | 8.2 | 68 | -\$532 | -\$8 | 4,075 million gallons gasoline and 271 million gallons diesel | |
| AFW-8 | Promotion of Advanced Municipal Solid Waste (MSW) Management Technologies (Including Bioreactor Technology) | 1.9 | 4.4 | 34 | \$294 | \$9 | 190,000 short tons coal or 4,000 cubic feet NG and 109 million gallons diesel | |
| AFW-9 | Commercialization of Biomass-to-Energy and Bio-Products Technologies | | | | | | | |
| | A. Manure Digestion/ Other Waste Energy Utilization | 0.04 | 0.09 | 0.8 | -\$13 | -\$17 | 4,500 short tons coal or 100 cubic feet natural gas | |
| | B. WWTP Biosolids Energy Production & Other Biomass Conversion Technologies | 2.4 | 5.0 | 42 | \$1,848 | \$44 | 2.5 million short tons coal or 55,000 cubic feet natural gas | |

| Agriculture, Forestry and Waste Management (AFW), continued | | | | | | | |
|--|---|-----------|-----------|------------|-----------------|-------------|--|
| AFW-9 | C. Bio-Products Technologies and Use | 0.2 | 0.3 | 2.6 | -\$161 | -\$62 | |
| AFW-10 | Programs to Support Local Farming/Buy Local | N/Q | | | | | |
| | Sector Totals | 44 | 85 | 752 | \$11,014 | \$15 | |
| | Sector Total After Adjusting for Overlaps* | 25 | 58 | 469 | \$5,974 | \$13 | |
| | Reductions From Recent Actions | — | — | — | — | — | |
| | Sector Total Plus Recent Actions | 25 | 58 | 469 | \$5,974 | \$13 | |

| Government Policy and Coordination | |
|---|--|
| Policy No. | Policy Recommendation |
| GP-1 | Targets, Reporting, Funding, and Accountability Measures |
| GP-2 | Public Awareness and Education |
| GP-3 | Inter-Governmental Planning Coordination and Assistance |
| GP-4 | "Green" Business Development Policies |
| GP-5 | Introduce Core Competencies Into Professional Licensing Programs |

| Adaptation Strategies | |
|------------------------------|--|
| Policy No. | Policy Recommendation |
| ADP-1 | Advancing Science Data and Analysis for Climate Change |
| ADP-2 | Comprehensive Planning |
| ADP-2.1 | Local Government Level |
| ADP-2.2 | Regional Government Level |
| ADP-2.3 | State Government Level |
| ADP-3 | Protection of Ecosystems and Biodiversity |
| ADP-3.1 | Uplands, Freshwater and Marine Systems |
| ADP-3.2 | Beaches and Beach Management |
| ADP-3.3 | Species Protection |
| ADP-4 | Water Resource Management |
| ADP-5 | Built Environment, Infrastructure and Community Protection |
| ADP-5.1 | Building Codes and Regulation |
| ADP-5.2 | Flood Protection |
| ADP-5.3 | Beaches as Infrastructure |
| ADP-5.4 | Transportation and Other Infrastructure |
| ADP-6 | Transportation and Other Infrastructure (moved into ADP-5) |

| | |
|-------|----------------------|
| ADP-7 | Economic Development |
|-------|----------------------|

| Adaptation Strategies, continued | |
|---|---|
| ADP-7.1 | Tourism |
| ADP-7.2 | Other Resource-based Industries |
| ADP-7.2.1 | Agriculture |
| ADP-7.2.2 | Forests |
| ADP-7.2.3 | Marine |
| ADP-7.2.4 | Aquaculture |
| ADP-7.2.5 | Mining |
| ADP-7.3 | Construction |
| ADP-8 | Insurance (Property and Casualty) |
| ADP-9 | Emergency Preparedness and Response (Extreme Events) |
| ADP-10 | Human Health Concerns |
| ADP-10.1 | Health Care |
| ADP-10.2 | Air Quality |
| ADP-10.3 | Wastewater Treatment |
| ADP-10.4 | Disaster Response |
| ADP-10.5 | Medical Treatment and Biomedicine Development |
| ADP-11 | Social Effects |
| ADP-11.1 | Social Justice Issues |
| ADP-11.2 | Food and Water Security |
| ADP-11.3 | Housing |
| ADP-11.4 | Intersection of Climate Change and Human Behavior |
| ADP-12 | Organizing State Government for the Long Haul |
| ADP-13 | State Funding and Financing |
| ADP-14 | Coordinating with Other Regulatory and Standards Entities |
| ADP-14.1 | Federal Government |
| ADP-14.2 | Professional Societies |
| ADP-15 | Public Education and Outreach |