

South Carolina's Renewable Energy & Climate Policies & Programs: Lessons for Federal Policies & Actions

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385 Russell Senate Office Building

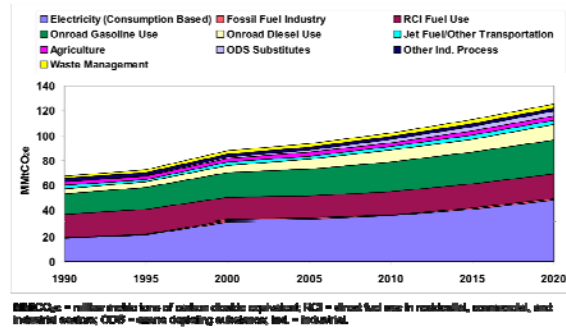
Presented By:
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SC Emissions By Sector

Figure EX-1. Gross GHG emissions by sector, 1990-2020: historical and projected (consumption-based approach) business-as-usual/base case



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SC AFW Policy Options

No.	Policy Recommendation	GHG Reductions (MMtCO ₂ e)			Net Present Value 2009-2020 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)
		2012	2020	Total 2009-2020		
AFW-1*	On-Farm Energy Efficiency	0.052	0.16	1.0	-\$43	-\$41
AFW-2a	On-Farm Waste Energy Recovery—Swine/Dairy	0.006	0.019	0.13	\$0.58	\$5
AFW-2b ⁵	On-Farm Waste Energy Recovery—Poultry Litter	0.010	0.031	0.20	-\$3.2	-\$16
AFW-3	Expanded Use of Local Agricultural Products	0.012	0.030	0.21	Not quantified	Not quantified
AFW-4a ^{1,2}	In-State Liquid Biofuels Production—Biodiesel	0.12	0.13	1.5	\$26	\$17
AFW-4b ³	In-State Liquid Biofuels Production—Ethanol	0.86	1.5	13	\$281	\$22
AFW-5 ⁴	Expanded Use of Biomass Feedstocks for Electricity, Heat, or Steam Production	2.7	4.9	41	\$156	\$4
AFW-6a	Terrestrial Carbon Sequestration—Agriculture	0.21	0.39	3.1	-\$191	-\$62
AFW-6bi	Terrestrial Carbon Sequestration—Forestry: Forest Management	0.33	0.85	5.8	\$53	\$9
AFW-6bii	Terrestrial Carbon Sequestration—Forestry: Afforestation/Reforestation	0.81	2.4	16	\$158	\$10
AFW-6biii ⁶	Terrestrial Carbon Sequestration—Forestry: Urban Forestry	0.37	1.2	7.5	\$456	\$60
AFW-7a	Conservation and Restoration of Agriculture Lands for Enhanced Carbon Sequestration	0.080	0.21	1.5	\$54	\$37
AFW-7b	Conservation and Restoration of Forestlands for Enhanced Carbon Sequestration	0.42	3.1	16	\$117	\$7
AFW-8	Advanced Recycling and Composting	1.18	3.0	20	-\$44	-\$2
AFW-9 ⁷	Waste-to-Energy Reclamation	0.41	1.0	7.2	\$0.23	\$0.03
AFW-10*	Water and Wastewater Energy Efficiency Improvements	0.16	0.18	1.6	-\$33	-\$21
Sector Total After Adjusting for Overlaps		7.8	19.2	135	\$987	\$7
Reductions From Recent Actions		—	—	—	—	—
Sector Total Plus Recent Actions		7.8	19.2	135	\$987	\$7



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Planning Process, Results & Challenges

- A broad array of stakeholders comprised the Climate, Energy & Commerce Advisory Committee (CECAC), which was broken up into topic Task Forces
- Numerous Task Force and Full Committee meetings
- Reviewed and issued recommendations
- Governor has not yet acted



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South Carolina's Renewable Energy Programs

- 2004: Secured a DOE Biomass planning grant
- Created a Biomass Development Program
- 2006: Created broadly representative SC Biomass Council (SCBC)—www.scbiomass.org
- SCBC developed and lobbied for State Biomass and Bio-Energy Programs
- 2007: General Assembly overrode Governor's veto and programs began to be implemented



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Lessons Learned

- State-level planning and actions are important & should be encouraged
- State governmental actions and support are critical
- Federal encouragement and support of state planning is helpful
- Feedback about state efforts can help shape federal policies and programs



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Case Study: How South Carolina's Renewable Energy Programs & Policies Are Helping ATP Commercialize Torrefaction Technology

By

Joseph J. James, President
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The Problem

Untreated cellulosic biomass may be as much as 50% water, it's bulky, of low value, fibrous, perishable, costly to transport and it's not the most efficient or useable bio-fuel or bio-feedstock.

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Solution: NC State University's Unique Application of Torrefaction Technology

- **Untreated Biomass:**
 - Bulky
 - Moist
 - Fibrous
 - Perishable
 - Waste
 - Expensive to transport
- **Torrefied Biomass:**
 - Dense, If Pelletized, Etc.
 - Dry & Water Resistant
 - Easily Crushed
 - Does Not Rot
 - Valuable Fuel
 - Energy Dense

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Torrefaction: Process & Benefits

- Heating (300-400° C) wood, in a low-oxygen environment, evaporates water, volatile organic compounds (VOC's), and hemicellulose (HC) from the cellulose and lignin.
- The VOC's and HC are combusted to generate 80% of the torrefaction process heat.
- The resulting and remaining warm lignin acts as a binder when the torrefied wood is compressed.
- Torrefied wood cost-effectively replaces coal, makes superior pellets and is a superior feedstock for further pyrolysis or gasification for combined heat and power or Fischer-Tropsch liquids. Shipping costs/BTU are reduced.

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South Carolina's Programs

- **SCREG:** Provides matching bio-energy grants.
- **SC EPSCoR:** Covers costs of developing SBIR/STTR grant applications.
- **SC Launch:** Provides matching grants for high-growth technology companies.
- **Technical Assistance:** Includes matchmaking and other technical support.
- **One-Stop Shop:** Coordinates the process of state development and regulatory approvals.

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Suggested Federal Actions

- **Enact a Comprehensive Climate/Energy Bill:** Will create stimulative market conditions.
- **Small Business Financing:** Quickly un-freeze and expand the availability of debt capital.
- **Regional Differences:** Recognize regional strengths and weaknesses.
- **Regional Cooperation:** Encourage states, universities and companies, within regions of common renewable energy resources, to collaborate.

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Suggested Federal Actions Cont...

- **Promote Inter-Agency Collaboration:** Encourage various federal agencies to coordinate and expedite their programs at the national and regional level.
- **Promote Rural Development and Poverty Reduction Opportunities:** Biomass utilization stimulates rural development and poverty reduction.
- **Biomass Zones:** Create multi-state Biomass Zones to achieve multiple benefits.

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Thanks!!!

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