Beyond Electricity: Integration of Electricity, Water, and Transportation Efficiency Potential in North and South Carolina

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ABSTRACT

State-level energy efficiency studies have typically focused on measures to achieve electricity and/or natural gas energy savings in the buildings and industrial sectors. As a growing number of states pursue these studies, there is a growing awareness of the interplay between electric efficiency potential and: (1) energy efficiency opportunities in the transportation sector; and (2) water efficiency. Regional variations typically drive the scope of energy efficiency potential studies, and in the Southeast water resource issues have recently become a particular concern. This paper will review two recent studies prepared by the authors on the potential for energy efficiency in North Carolina, which examines electricity, water, and transportation efficiency measures, and South Carolina, which examines electricity and water efficiency. The paper analyzes the potential energy and water savings achievable through 2025, policy mechanisms that can achieve the potential energy and water savings, and costs of saved energy and water. Finally, the paper explores how various stakeholders have made use of the results of these comprehensive analyses.

Introduction

Population growth, rising energy consumption, issues with power system reliability, and volatility in energy markets are constant threats to the stability of our economy. In the last several years, more states have become aware of the benefits of energy efficiency and its potential to alleviate the impacts that these issues create. Energy efficiency is touted as the cheapest, cleanest and most reliable resource available to generate both short- and long-term economic and social benefits to consumers, such as creating new, local jobs, lowering consumer bills, and abating emissions, which all help to stimulate the economy. The volume of potential for energy efficiency and the policies and programs that need to be developed to capture the potential energy and economic savings, however, are often less well-known to state policymakers. A growing number of states are, therefore, looking to energy efficiency potential studies as a means of guiding their resource planning.

State-level energy efficiency studies have typically focused on measures to achieve electricity and/or natural gas savings in the residential, commercial and industrial sectors. These studies evaluate and quantify the cost-effective potential for energy efficiency in the state and look at the policies or programs that could be implemented to capture the identified savings. Some studies, such as those published by ACEEE, also estimate the potential economic impact of energy efficiency on jobs and economic growth. Typically, however, these studies overlook resources or sectors other than electricity and natural gas; specifically, water and transportation. Examining these resources can offer important insights to policymakers on links between resources and how best to plan comprehensive clean energy strategies.

Our concern for resource efficiency must transcend the bounds of our electric power system and the natural gas market. Ensuring the reliable supply of electricity is, understandably, a paramount issue for state governments, but without an abundant and accessible supply of water most electricity in the United States could not be generated. Without an efficient transportation system, the interaction and communication between all sectors of the economy would be profoundly hampered. The intrinsic links of our energy, water, and transportation resources behooves states to attack these issues holistically if they are to reap the full benefits of efficiency and support a high quality of life for their citizens.

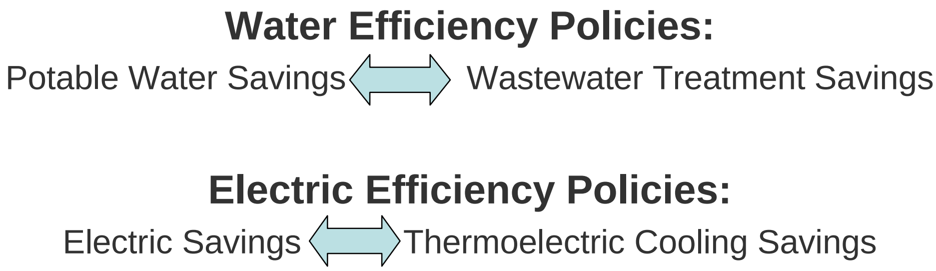
Goals of this Report

This paper, which is based on two recently released ACEEE state efficiency potential studies, explores the water-electricity nexus and transportation efficiency in North Carolina and South Carolina (see Eldridge et al 2010 and Neubauer et al 2009). First, we examine the interdependency of water and electricity resources in general, followed by a discussion of how it pertains to the Carolinas specifically. This includes an examination of current issues with water and electricity resources in the two states. Within this discussion we estimate the cost-effective potential for energy savings in the Carolinas and the reduced water needs for cooling at power plants from reduced electricity demand. Next, we examine the potential for end-use water savings in the Carolinas from the recommended water efficiency policies included in our studies. Finally, we examine the importance of transportation efficiency to a state's comprehensive clean energy resource planning. We conclude with a synopsis of movement in the two states towards implementing the water and energy efficiency policies.

The Water-Electricity Nexus

The ties between electricity and water are inextricable – and the future availability of both depends greatly on the efficient use of the other. First, electricity generation requires a tremendous amount of water, both as feedwater for boilers and as thermoelectric cooling water for condensers and steam systems, whether fueled by coal, natural gas or nuclear fuel. As a result, water requirements for electric generation are in constant competition with other uses for and users of this increasingly limited resource. Second, water is an extremely electric-intensive resource. Electricity is required to source, treat, and transport potable water, and to collect, transport, treat, and discharge wastewater. Both electricity and natural gas are also used as fuel sources to heat not only potable water, but also to heat water used in hydronic heating systems – both radiant and steam – clothes washers, dishwashers, etc. Policies that address both electric efficiency and water efficiency can therefore work together to yield multiple benefits, including cost-effective water savings for public water systems and wastewater service providers, water and energy bill savings for customers, as well as macroeconomic benefits to the state economy.

Figure 1. Illustrating the Water-Energy Link



Water and Electricity Supply in the Carolinas

North Carolina and South Carolina share ties to both water and electricity supply resources. The two major investor-owned utilities, Duke Energy Carolinas and Progress Energy Carolinas, have operations in both states. The states also depend on common water resources. This interdependency on water resources, compounded by rising demand from growing populations and economies, has led to legal challenges. The two states have been in a legal battle since 2007 over rights to the water from the Catawba River, which originates near Mount Mitchell in North Carolina and winds its way within reach of two major metropolitan areas, Charlotte, North Carolina and Columbia, South Carolina, before emptying into Lake Moultrie near Charleston, South Carolina, where it runs into the Atlantic.

The Carolina “water war” began when South Carolina filed a lawsuit in 2007 in complaint of North Carolina’s plans to divert from the Catawba River Basin more than what South Carolina considered to be North Carolina’s equitable share, as established by an interbasin transfer statute enacted by North Carolina in 1991.[1] Seasonal variations in water supply compounded by high economic growth in North Carolina, concentrated especially in the Charlotte metropolitan area, spurred South Carolina to react in order to preserve a resource that it considers to be “essential to the generation of hydroelectric power, economic development and commerce, and recreation” in South Carolina.

The effects of large-scale diversion, excessive consumption, and seasonal variation in supply have only been magnified by the frequent droughts that the Southeastern region of the United States has been experiencing over the last decade. The latest drought in the Southeast lasted for about two years, from mid-2007 until mid-2009, during which many states in the region recorded their worst dry-spells in over 100 years, with total rainfall close to one foot below normal levels (O’Driscoll and Copeland, 2007). During that time the Carolinas’ water supply suffered immensely, which had serious implications for the supply of electricity as well. For example, low water levels experienced in river basins in North Carolina, such as Cape Fear and Yadkin—Peedee forced utilities to scale back power plant operations due to lack of cooling water (Weiss 2008; Muraski 2007).

Water and Electricity Demand in the Carolinas

Power plant cooling is the single largest off-stream[2] demand of water in both North and South Carolina, equivalent to more than ten times that of water used for public purposes (see

[1] See N.C. General Statute Annotated § 143-215.22G(1)(h)

[2] Off-stream use is water withdrawn or diverted from a groundwater or surface—water source for public water supply, industry, irrigation, livestock, thermoelectric power generation or other uses.

Table 1). And the Carolinas rely disproportionately on nuclear and coal resources for electricity generation, the two most water-intensive sources of electric power generation. These resources comprised 92% of generation in 2008 in the Carolinas compared to the 68% for the United States as a whole (EIA 2009). Rising electricity demand of about 1 – 1.4% per year in both states and plans for new coal and nuclear facilities suggests that the Carolina "water war" and supply-side issues will be long-term struggles. Both electricity and water efficiency can thus play a critical role in addressing some of these concerns.

Table 1. Water Consumption in the Carolinas, Million Gallons per Day (mgd) in 2005

	North Carolina	South Carolina
Thermoelectric Cooling	9,900	9,780
National Rank	*6th*	*13th*
Public Water Supply	921	647
National Rank	*14th*	*24th*
Source: United States Geological Survey (USGS 2009)		

Energy Efficiency: Electricity Policies and Programs

The interdependency and individual characteristics of the two state's economies and energy markets have made reaching a mutually beneficial resolution to the Carolinas' water supply issue an extremely delicate process. Both states suffer from two of the highest rates of unemployment in the nation. Additionally, North Carolina's economic and population growth are increasing demand for energy while South Carolina's economy is one of the most energy-intensive in the nation, despite relatively slow population growth.

Table 2. Energy Intensity in the Carolinas Relative to the Rest of the United States

Category	NC Rank	SC Rank
Electricity Consumption Per Capita*	18th	7th
Energy Consumption Per Capita	35th	15th
Energy Consumption Per Dollar of GSP	31st	13th
Total Electricity Consumption	9th	18th
Total Energy Consumption	12th	22nd

*ACEEE estimate (EIA 2009a, Economy.com 2010)

Note: A higher ranking reflects greater energy consumption relative to other states.

Achievable Savings in the Carolinas from Energy Efficiency Policies and Programs

Several efficiency potential studies for electricity were completed for the Carolinas prior to the ACEEE studies. Our studies include a meta-analysis of these recent efficiency assessments for the Carolinas, the Southeast, and nationally to serve as a basis for achievable, market potential[3]. The meta-analysis found that about 1-2% incremental electricity savings per year are achievable and cost-effective in residential and commercial buildings and industrial facilities in the two states. Next, we examined a suite of about a dozen energy efficiency policies that each state could utilize to meet growing electricity needs and tap into the available and cost-effective efficiency resources (see Tables 3 and 4). Some of these include an Energy Efficiency Resource

[3] These studies include: GDS Associates 2007 (South Carolina); Duke Energy/ Forefront Economics 2007 (South Carolina); GDS Associates 2006/ La Capra 2006 (North Carolina); Appalachian State University 2008 SEEA 2009; McKinsey 2009; Laitner and McKinney 2008

Standard requiring electric utility efficiency program savings, updated building energy codes and enforcement, removing barriers to combined heat and power, and energy savings performance contracts for public facilities. For each policy, we estimated year-by-year savings based on: (1) a reasonable rate of program or policy penetration as shown in best practices in other states; (2) projections of population, housing, and energy usage in the states through 2025; and (3) the range of achievable, market potential as identified in the meta-analysis. For detailed description of the methodology for each policy, see Eldridge et al 2010 and Neubauer et al 2009. Based on these policy analyses, we estimate total cost-effective, achievable savings from these policies of 37,800 GWh in North Carolina (see Table 3) and 19,484 GWh in South Carolina (see Table 4), or about 24% and 21% of the expected electricity needs in the two states, respectively.

Table 3. Summary of Electricity Savings by Policy or Program for North Carolina

	Total Annual Electricity Savings by Policy (GWh)	**2025**	**Total Savings in 2025** (%)**
1	Energy Efficiency Resource Standard (EERS)*	20,590	12.9%
	Proven Programs: Residential and Commercial	*18,800*	*11.8%*
2	*Manufacturing Initiative*	*1,790*	*1.1%*
3	Building Energy Codes	4,500	2.8%
4	Advanced Energy-Efficient Buildings Initiative	1,830	1.1%
5	Behavioral Initiative	1,570	1.0%
6	Public Facilities Performance Contracting	2,840	1.8%
7	Rural & Agricultural Initiative	150	0.1%
8	Manufactured Homes Initiative	1,550	1.0%
10	Combined Heat & Power (CHP)	1,460	0.9%
	New Federal Appliance Efficiency Standards	3,180	2.0%
	Electricity Savings from Water Efficiency Policies	150	0.1%
	Total Savings***	**37,800**	**24%**

Water Savings from Electricity Policies

Above we noted that both states rely on coal and nuclear power for over 90% of their electricity generation, which means that the thermoelectric water cooling demand between the two states is quite high relative to the rest of the United States. Therefore, there is greater potential for generation-related water savings from energy efficiency in the Carolinas than there is elsewhere in the nation. To quantify the water savings realized through the efficiency policies and programs presented above, we first determined the average water intensity for thermoelectric power generation for each state, in gallons per megawatt hour (g/MWh), which is shown in Table 5. Then we multiplied the savings estimated from our policy analyses with the average water intensity to determine the impact of energy efficiency on water consumption. Under these assumptions, we estimated that, based on the electricity savings identified in the policy analyses, the energy efficiency policies and programs we recommended will yield reductions in water withdrawals by 3,000 and 1,800 million gallons per day in 2025 in North and South Carolina, respectively (see Table 5).

Table 4. Summary of Electricity Savings by Policy or Program for South Carolina

	Cumulative Electricity Savings by Policy (GWh)	2025	Total Savings in 2025 (%)
1	***Energy Efficiency Resource Standard***		
2	Advanced Buildings Initiative	957	1.0%
3	Behavioral Initiative	769	0.8%
5	CHP	300	0.3%
6	Lead by Example	1,873	2.0%
7	Low-Income Weatherization	1,662	1.7%
8	Manufactured Homes Initiative	1,976	2.1%
9	Manufacturer Initiative	1,914	2.0%
10	Rural & Agricultural Initiative	52	0.1%
11	***Proven Utility Programs***		
	Residential	4,311	4.5%
	Commercial	3,180	3.3%
	EERS Savings	**16,994**	**17.9%**
4	Building Energy Codes	2,490	2.6%
	Total Savings (EERS + Bldg Codes)	**19,484**	**20.5%**

Table 5. Summary of Electricity Savings and Equivalent Water Savings

	North Carolina		South Carolina	
	2015	**2025**	**2015**	**2025**
Energy Efficiency Policies and Programs	7,368	37,654	3,145	19,184
Water Policies and Programs	42	176	21	85
Total Electricity Savings (GWh)	**7,410**	**37,838**	**3,166**	**19,569**
Average Water Intensity (gallons/MWh)	**29,130**		**38,621**	
Total Water Savings (mgd)	**600**	**3,000**	**300**	**1,800**

Table 6 below shows the volume of thermoelectric generation in the Carolinas and the water consumed for cooling purposes. Although cooling requirements vary somewhat from plant to plant depending on the combustion cycle and the cooling system, the water requirement for cooling thermoelectric generating stations in the Carolinas is considerable, averaging 29,000 gallons per MWh in North Carolina and almost 39,000 gallons per MWh in South Carolina.

Table 6. Water Intensity of Thermoelectric Power Generation in the Carolinas

Year	Thermoelectric* Generation (MWh)	Thermoelectric Water Use (million gallons)	Water Intensity (gallons/MWh)
North Carolina			
2000	118,801,995	3,456,550	29,095
2005	123,902,833	3,613,500	29,130
Average 2000 & 2005			
South Carolina			
2004	93,173,693	3,232,104	34,689
2005	97,444,270	4,256,504	43,681
2006	95,226,224	3,570,217	37,492
Average 2004-2006			38,621

* Thermoelectric = coal, petroleum, natural gas, nuclear, wood, and other biomass.
Source: EIA (2009b,c); USGS (2004, 2009); SCDHEC (2004-2006)

Water Efficiency: Water Policies and Programs

The public supply of potable water constitutes the second largest off-stream use of water in both North and South Carolina (USGS 2009). We examined about a half dozen water efficiency policies that would primarily achieve water savings from reduced consumption while also achieving some electricity savings from reduced treatment, transport, etc. The policies we examined are listed below in Table 7.

Table 7. Summary of Water Efficiency Policies Included in Carolina Studies

Policy	Description
Plumbing Efficiency Standards	Adopt minimum efficiency standards for new residential toilets, faucets, and showerheads beginning in 2012—statewide.
Replacement of Inefficient Plumbing	Replace inefficient plumbing upon resale of homes in 10 largest counties
Water Loss (Leakage) Reduction	Consistent annual reporting of water losses—statewide; elimination of 50% of economically recoverable water losses by 2025 in 10 largest water utilities or counties
Water Efficient Landscape Irrigation Ordinances	Adopt water-efficient ordinance applicable to newly-installed landscapes in the 10 fastest growing counties
Conservation Pricing of Water & Sewer Service	Policy Discussion – Utilize uniform or increasing block rates, where unit price of water increases with increased levels of metered water consumption, to meet revenue requirements and encourage conservation.
Electric Utility Clothes Washer Incentives	Customer incentive programs for new and more efficient clothes washers
New Federal Clothes Washer Standards	Quantify impacts from adoption of stronger minimum energy and water efficiency standards for clothes washers issued by the U.S. Department of Energy

Water Savings from Water Policies

Total estimated water savings, as shown in Table 8, reach 76.1 and 32.3 million gallons per day in 2025 in North and South Carolina, respectively. To put this into perspective, these savings are equivalent to 8% and 5% of the total water withdrawals reported in 2005 for public water suppliers for North and South Carolina, respectively.[4]

Electricity Savings from Water Policies

The water savings policies also produce some electricity savings, as shown in Table 8. The end-use, or on-site, electricity savings from reduced water consumption reach 94.8 and 54.1 GWh in 2025 for North and South Carolina, respectively. The off-site electricity savings (reduced electricity from water treatment) reach 81.3 and 30.8 GWh in 2025 for North and South Carolina, respectively. Total electricity savings from water efficiency reaches 176.1 and 84.9 GWh in 2025, for North and South Carolina, respectively, or about 0.1% of 2007 reported sales in both states.

[4] Percent savings are given relative to reported withdrawals in 2005 because forecasts for water withdrawals were not available in either state.

Table 8. Summary of Water and Electricity Savings by Water Efficiency Policy

	Annual Water Savings by Policy (mgd)	North Carolina		South Carolina	
		2015	2025	2015	2025
	Statewide Plumbing Efficiency Standards	4.1	15.0	2.1	8.0
	Inefficient Plumbing Replacement	3.8	8.8	2.1	5.0
	Utility System Water Loss Reduction	0.7	7.0	0.8	8.8
	Water Efficient Landscape Irrigation	4.6	13.2	2.2	8.3
1	Water Conserving Rate Structures	-	-	-	-
2	Electric Utility Clothes Washer Incentives	1.4	4.2	0.9	2.2
2	New Federal Clothes Washer Standards	1.3	27.9		
	Total Estimated Water Savings (mgd)	**15.9**	**76.1**	**8.1**	**32.3**
	Annual Electricity Savings (GWh)				
	Statewide Plumbing Efficiency Standards	25.1	94.8	12.9	54.1
2	Electric Utility Clothes Washer Incentives	-	-	-	-
2	New Federal Clothes Washer Standards	-	-	-	-
	On-Site Electricity Savings	**25.1**	**94.8**	**12.9**	**54.1**
3	**Offsite Electricity Savings—All Policies**	**16.5**	**81.3**	**8.3**	**30.8**
	Total Electricity Savings from Water (GWh)	**41.6**	**176.1**	**21.2**	**84.9**
3	**$ Savings from Reduced Water Treatment (Million $)**	**$14.5**	**$69.4**	**$8.0**	**$31.8**

Notes
1. Recommended, but potential water savings not quantified.
2. Clothes washer water savings shown here; clothes washer energy savings are included in Utility Program electricity savings.
3. Indoor water use reductions yield off-site electricity savings of 3239 KWh/mg; outdoor water use reductions yield off-site electricity savings of 2061 KWh/mg. Using the average commercial retail price of electricity by state for 2009 (EIA 2010), this is equivalent to $2500/mg in North Carolina and $2700/mg in South Carolina.

Transportation Efficiency: Transportation Policies and Programs

Addressing a state's overall efficiency potential without considering the contribution of transportation efficiency policies to savings overlooks a major energy consumption sector. The U.S. transportation sector consumes 28% of total energy use in the United States, making it the second largest user of energy in the country. Significant advances in transportation efficiency have been made in recent years. In May 2009, the Obama Administration issued an order to establish harmonized federal standards for fuel economy and greenhouse gas emissions for model years 2011 to 2016 that will match California's standards in stringency. On April 1st, 2010, EPA and the U.S Department of Transportation (DOT) announced a joint final rule that requires vehicles to meet a combined fuel economy average of 35.5 miles per gallon by 2016.

Nevertheless, state decision makers have started to turn their attention towards instituting transportation policies that go above and beyond what is mandated at the federal level. This is particularly the case on vehicle system efficiency, where a lack of firm federal policy has encouraged states such as California to implement their own transportation-specific vehicle-miles-traveled and greenhouse gas reduction goals (S.B. 375.)

Transportation in North Carolina

In 2007, the transportation sector in North Carolina consumed 766,904 billion Btus of energy, 28% of total energy use in the state and about 2.6% of total transportation energy consumption in the United States (EIA 2010). The 2.4% yearly growth in North Carolina's transportation fuel consumption of the 1990s slowed to an average of 1.05% over the past decade, but even this more moderate trend in growth increases the state's vulnerability to high fuel prices and economic instability.

North Carolina's geographic and demographic diversity present a challenge to statewide transportation policy. Policies applicable to urban, high-density areas may not be suitable for the swathes of the state consisting of highly rural communities. However, increasing congestion and concerns about climate change have made addressing transportation challenges a growing priority for the state.. The recent passage of H.B. 148, which allows counties with existing transit facilities to implement a ½ percent local option sales tax[5] to finance transit expansion and improve connectivity between key economic and urban hubs, is an indication that North Carolina is taking a new approach to transportation issues. Nevertheless, many additional steps are required to reduce transportation's contribution to energy consumption across the state.

ACEEE modeled North Carolina's transportation savings potential above and beyond the "business as usual" transportation scenario, or reference case. The transportation reference case takes into account the increase in federal fuel economy standards that will occur in 2011, as well as the major increases proposed jointly by the U.S. EPA and the National Highway Transportation Safety Administration (NHTSA) for the period 2012 to 2016. Those standards, finalized in April 2010, require a 34.1 mile-per-gallon average for cars and light trucks sold nationwide in 2016. The strategies outlined in Table 7 will produce gasoline savings above and beyond savings achieved through these federal programs. The Energy Independence and Security Act (EISA) of 2007 requires that fuel economy standards be set for work trucks and heavy trucks as well. No assumptions of increased fuel economy have been made for these vehicles, however, because the level of standards to be proposed is unknown. For more information on the methodology employed in North Carolina, please refer to Eldridge et al, 2010.

Table 9 outlines the policy options available to North Carolina that will maximize cost-effective savings in fuel consumption. Table 10 shows the annual gasoline and diesel savings in 2015 and 2025 for the associated policies.

Table 9. Summary of Transportation Policies included in North Carolina

Policy	Description
Clean Car Standard	211 g/mile CO2 by 2020
Heavy Truck Efficiency Package	Incentives for SmartWay-type improvements for long-distance trucks registered in North Carolina
Freight Intermodal Investments	10% diversion of long-haul truck freight to rail
Pay-As-You-Drive Insurance	Mileage-based insurance for high-growth counties in the state
Truck Stop Electrification	Low-interest loan programs for truck stops in North Carolina
Transit Expansion / Concentration of Urban Development	Transit expansion plus half of metro growth to transit stops; assume 15% reduction in VMT from doubling density around rail stations

[5] Counties can decide to implement the sales tax once a public vote has been taken.

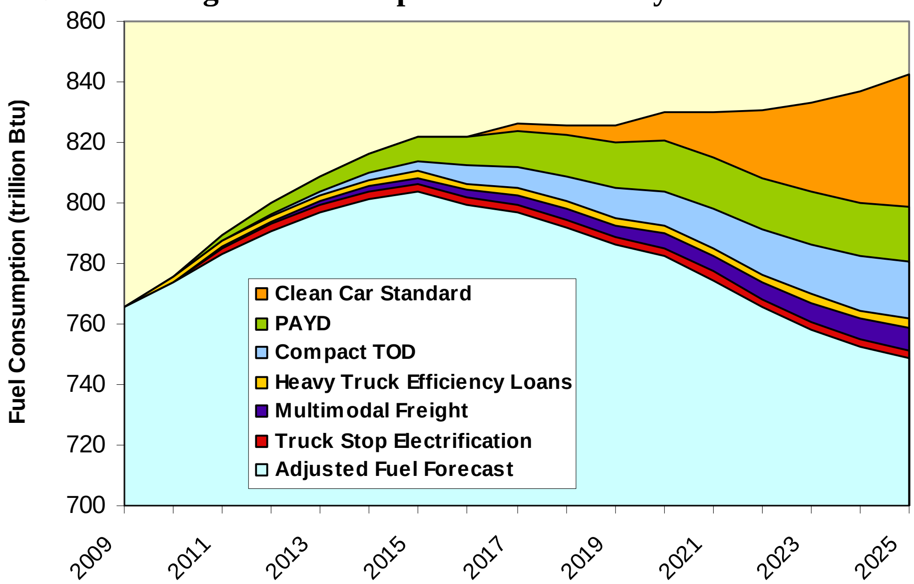
Fuel Savings from Transportation Policies

Total combined transportation savings efficiency potential (gasoline and diesel) in North Carolina amounts to 10.8% of fuel use over the lifetime of these policies. Table 10 outlines the fuel savings from individual transportation policies. Figure 3 highlights the savings expected from the policies described above over the reference case gasoline and diesel consumption in the state.

Table 10. Transportation Savings by Policy or Program in North Carolina

	Cumulative Transportation Savings by Policy (thousand barrels)	2015	2025	Savings in 2025 (%)
1	Clean Car Standard	0	3,456	6.7%
2	Pay-as-you-drive Insurance	2,029	3,847	3.1%
3	Transit Expansion / Concentration of Urban Development	379	2,395	1.9%
	Total Gasoline Savings	**2,450**	**14,174**	**11.3%**
5	Truck Stop Electrification	402	402	1.26%
6	Heavy Truck Efficiency Package	555	830	2.6%
7	Freight Intermodal Investments	366	1,278	4.0%
	Total Diesel Savings	**1,302**	**2,450**	**7.7%**

Figure 3. Fuel Savings from Transportation Efficiency Policies in North Carolina



Transportation policies such as those that encourage compact, transit-oriented developments, not only improve transportation system efficiency by providing residents with various affordable alternative to driving but also encourage the construction of multi-family buildings, which are inherently more energy-efficient that single-family homes, thus improving the overall efficiency of the residential sector (TRB 2009). Similarly, the truck anti-idling and light-duty vehicle electrification policies outlined for North Carolina impact not only the transportation fuel use but also electricity consumption in that decreased fuel consumption is offset by the additional electricity use necessary for the implementation of these policies.

However, given that electricity providers are already making the transition from coal-generated to nuclear-generated electricity and that the future electricity grid in North Carolina is anticipated to be significantly cleaner and more energy-efficient, the net efficiency gains for both the electric and transportation sectors are substantial.

Examples of Stakeholder Initiative from Carolina Studies

Upon completion of any ACEEE state study, funding is appropriated in order to provide technical assistance to states for about one year to eighteen months following the release of the study. Examples of technical assistance in other states have included writing model language to guide future legislation, participating in workshops or other presentations to disseminate pertinent information to broader audiences, such as businesses, consumers, policymakers, and state government representatives.

Historically the Carolinas, South Carolina in particular, have been somewhat complacent in their efforts to adopt policies and programs that can seriously moderate growth in energy and water consumption. Little time has passed since the publication of the two studies for tangible progress to have been made, but there is recent evidence that the two states will be moving forward with greater energy efficiency in the near future.

North Carolina

ACEEE's North Carolina study was only recently released in March 2010, so there has been little policy movement in the months hence. However, ACEEE presented the final report to the state's Energy Policy Council, and will continue working with the Council and additional stakeholders over the next year on energy efficiency opportunities in the state..

South Carolina

The release of ACEEE's South Carolina study was well received by advocates, businesses, utilities, and state representatives alike. Attendees of the media release in Charleston, South Carolina, included State Senators Paul Campbell and Senate President Glenn McConnell. Both Senators offered their support in advancing many of the policies recommended by ACEEE. Since the release in November 2009, ACEEE has been working in collaboration with Senators Campbell and McConnell, as well as Mike Couick, the President of the Electric Cooperatives of South Carolina (ECSC), in order to begin moving forward with some of the efficiency policies. Suzanne Watson, Policy Director at ACEEE, has been participating in several meetings, presentations and editorial boards promoting the ACEEE study in order to gain further support for progress.

Conclusion

As a growing number of states pursue energy efficiency potential studies as a means of crafting policies and programs to stem the myriad impacts of increasing energy demand, they must be sure to consider the complementary role that water and transportation efficiency policies can have on the total benefits that energy efficiency can create in the state. Likewise it is critical to take into account the transportation and water savings that can be generated from energy efficiency, as California does when conducting its cost/benefit analyses of energy efficiency programs. The ties between water consumption and electricity, particularly thermoelectric generation, are too tight to ignore – the availability of both resources is entirely dependent on the efficient use of the other. The frequent occurrence of droughts in the Southeastern region of the U.S. renders the water-energy issue paramount to other economic concerns because the future supply of water varies and is therefore quite uncertain.

Population growth and urban development are also putting strain on transportation systems, where increasing congestion and concerns about climate change have made addressing transportation challenges a growing priority for states like North Carolina. Economic growth cannot be sustained without a modern transportation system that facilitates communication across economic sectors. If states and cities intend to support their growing populations with fewer resources (like water) while maintaining their economic vitality, spurring the mobility of the population without dramatically increasing their costs, both economic- and health-related, is imperative.

Thus, moving forward with energy efficiency will require a much broader focus, especially as more states realize that implementing energy and resource efficiency cannot be limited to our buildings and facilities. The web of economic development is, in fact, much more intertwined and interdependent than we realize, so our future resource decisions must be made within that context – what affects one strand ultimately impacts another.

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