ACEEE

American Council for an Energy-Efficient Economy

Energizing Virginia: Efficiency First

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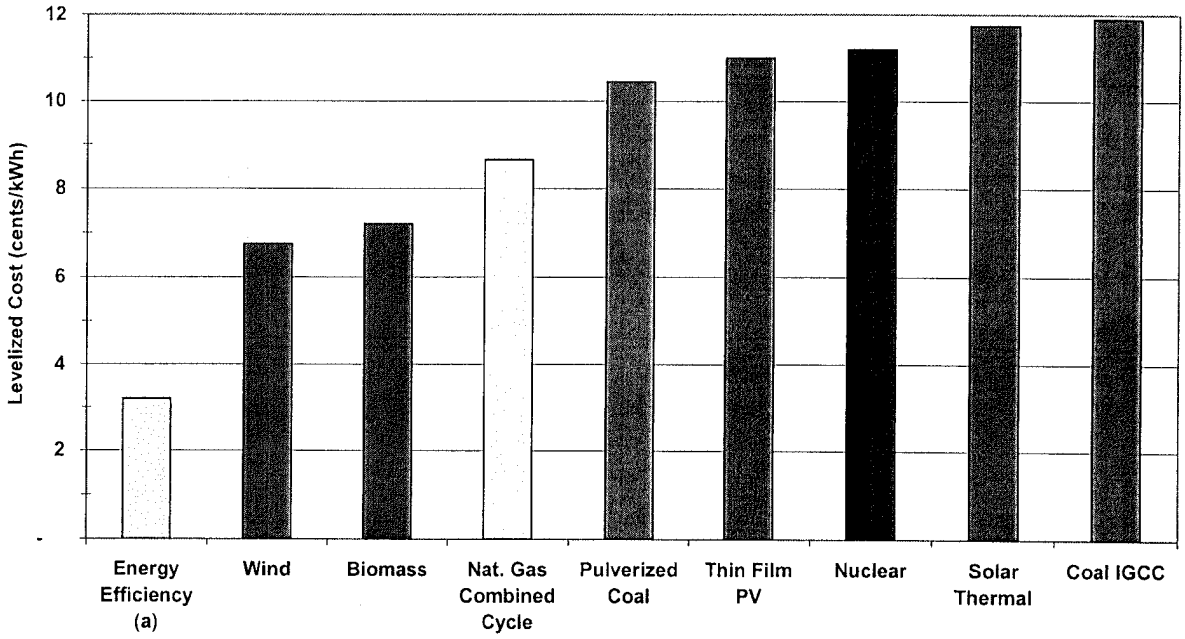
EXECUTIVE SUMMARY

Over the past decade, the Commonwealth of Virginia has experienced a rapid increase in its demand for electricity due in large part to economic and population growth, particularly in Northern Virginia. This rapid increase in Virginia's demand for electricity could negatively impact the Commonwealth's future economic growth by causing further increases in utility prices and the potential for decreased reliability. Energy efficiency and demand response have the potential to moderate these impacts while at the same time improving the economic health of the Commonwealth.

Energy efficiency and demand response are the lowest-cost resources available to meet this growing demand and the quickest to deploy for near-term impacts (see Figure ES-1).

Figure ES-1. Estimates of Levelized Cost of New Energy Resources



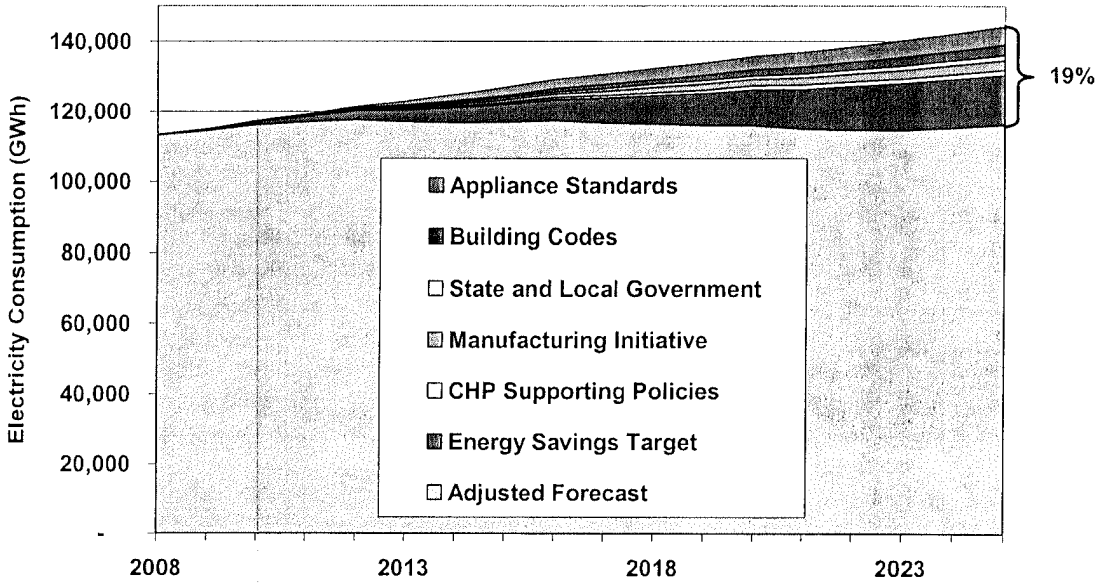
As can be seen in Figure ES-2, ACEEE estimates a suite of energy efficiency policies and programs that could save 10,000 GWh of electricity, or meet 8% of Virginia's electricity needs in 2015. By 2025, savings grow to 28,000 GWh, or 19% of Virginia's electricity needs in 2025, in our medium policy scenario.

Policy Recommendations

ACEEE suggests that policymakers consider the following suite of eleven policy recommendations:

1. Energy Efficiency Resource Standard (EERS)
2. Expanded Demand Response Initiatives
3. Combined Heat and Power (CHP) Supporting Policies
4. Manufacturing Initiative
5. State Facilities Initiative
6. Local Government Facilities Initiative
7. Building Energy Codes
8. Appliance and Equipment Efficiency Standards
9. Research, Development & Deployment (RD&D) Initiative
10. Consumer Education and Outreach
11. Low-Income Efficiency Programs

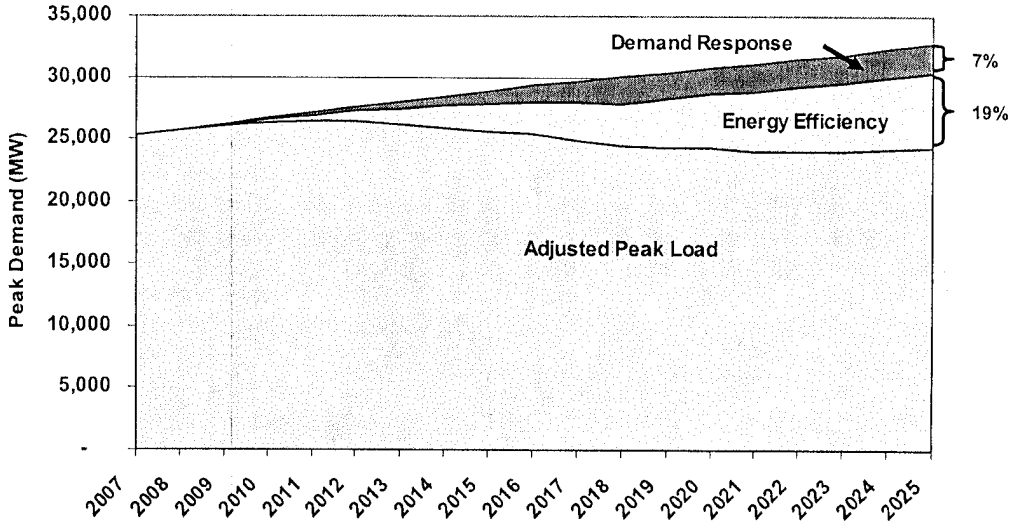
Figure ES-2. Share of Projected Electricity Use Met by Energy Efficiency Policies — Medium Scenario



These recommendations draw from the best practice policies currently implemented throughout the country. The EERS represents the core of these policies, providing a foundation upon which the manufacturing initiative, government facilities, appliance standards, and building codes can be layered to fully achieve the goals. Energy efficiency can also reduce peak demand in Virginia, which occurs during the summer on days when electricity needs are highest (see Figure ES-3).

In addition, we find that a suite of demand response (DR) recommendations, which focuses on shifting energy from peak periods to off-peak periods and cutting back electricity needs on days with the highest needs, is a critical component of reducing peak demand in Virginia. Figure ES-3 presents the combined effects of energy efficiency and demand response on peak reductions in a medium case policy scenario.

Figure ES-3. Estimated Reductions in Summer Peak Demand through Energy Efficiency and Demand Response — Medium Scenario (2025 peak reduction = 8,400 MW, or 26%)



ACEEE also considered a more aggressive suite of policies that would increase energy savings to 39,000 GWh in 2025, meeting 27% of Virginia's electricity needs in that year. Combined, the high scenario suite of energy efficiency policies plus the potential for demand response can reduce peak demand by nearly 11,000 MW in 2025, or a 36% reduction in peak demand.

Economic and Jobs Impacts

The energy savings from these efficiency policies can cut the electricity bills of customers by a net $500 million in 2015. Net annual savings grow nearly five-fold to $2.2 billion in 2025. While these savings will require some public and customer investment, by 2025 net cumulative savings on electricity bills will reach $15 billion. To put this into context, an average household will save a net $5 on its monthly electricity bill by 2015 and $20 per month by 2025. These savings are the result of two effects. First, participants in energy efficiency programs will install energy efficiency measures, such as more efficient appliances or heating equipment, therefore lowering their electricity consumption and electric bills. In addition, because of the current volatility in energy prices, efficiency strategies have the added benefit of improving the balance of demand and supply in energy markets, thereby stabilizing regional electricity prices for the future.

Investments in efficiency have the additional benefit of creating new, high-quality "green-collar" jobs in the Commonwealth and increasing both wages and Gross State Product (GSP). Our analysis shows that energy efficiency investments can create nearly 10,000 new jobs in Virginia by 2025 (see Table ES-1), including well-paying trade and professional jobs needed to design and install energy efficiency measures. These new jobs, including both direct and indirect employment effects, would be equivalent to almost 100 new manufacturing plants relocating to Virginia, but without the public costs for infrastructure or the environmental impacts of new facilities.

Table ES-1. Economic Impact of Energy Efficiency Investments in Virginia

Macroeconomic Impacts	2015	2025
Jobs (Actual)	675	9,820
Wages (Million $2006)	63	583
GSP (Million $2006)	202	882

Conclusions

The Commonwealth of Virginia finds itself at a juncture with respect to its energy future. The state can either continue to depend solely upon conventional energy resource technologies to meet its growing needs for electric power as it has for more than a century, or it can chose to slow—or even reduce—future demand for electricity by investing in energy efficiency and demand response. As this assessment documents, there are plenty of cost-effective energy efficiency and demand response opportunities in the state. However, as this report also discusses, these opportunities will not be realized without changes in policies and programs in the state. We suggest a wide array of energy efficiency and demand response policies and programs that have proven successful in the past, and can meet 90% of the increase in the state's electricity needs over the next 18 years, and 120% of the increase in peak demand. These policies and programs are already proving themselves in other states, delivering efficiency resources and reducing consumer electric expenditures. **And**, these policy and programs can accomplish this at a lower cost than building new generation and transmission, while at the same time creating nearly 10,000 new, high-quality "green collar" jobs by 2025.

These policy and program suggestions should not be viewed as prescriptive, but as the starting point for a dialog among stakeholders on how to realize the efficiency resource that is available to the state. ACEEE's suggestions are based on our review of existing opportunities and stakeholder discussions, and reflect proposals that we think are politically plausible in the state. Clearly there are

other policies and programs, some of which we suggest in our aggressive scenario, which could be implemented to realize even more of the available energy efficiency resource.

Also, we do not suggest that these recommendations will meet all of the state's future energy needs. While energy efficiency is perhaps the only new energy resource that is available near term and that can make an important contribution in the longer term, the state will need additional resources to meet the remainder of the new load and to replace older, dirtier power plants in the coming years. Most importantly, energy efficiency can buy time for a robust discussion about what other resource choices—both conventional and alternative—the state makes in the future.

Table 7. Matrix of Energy Efficiency Policies and Programs in Low, Medium, and High Level Case Scenarios

	Scenario One: Low Case	Scenario Two: Medium Case	Scenario Three: High Case
Energy Efficiency Resource Standard (EERS) *	10% (of 2006 electricity use) by 2022	15% (of 2006 electricity use) by 2022; extend 1% per year target to 2025 (relative to prior-year sales)	19% (of 2006 electricity use) by 2022; extend 1.5% per year to 2025 (relative to prior-year sales)
Demand Response **	Low participation (10-20%) and curtailment (15-20%) rates and low (30%) backup generation potential	Medium participation (20-30%) and curtailment (20-30%) rates and medium (40%) backup generation potential	High participation (30-40%) and curtailment (25-40%) rates and high (50%) backup generation potential
Combined Heat & Power Supporting Policies	No supporting policies	Some incentives and removal of disincentives toward CHP	Expanded incentives and removal of disincentives toward CHP
Manufacturing Initiative	Limited activities	Expanded state manufacturing initiative	More aggressive state manufacturing initiative combined with economic development incentives
State Facilities	Current ESCO initiative	Expanded ESCO initiative	More aggressive ESCO initiative
Local Government Facilities	Current modest effort	Extend ESCO model to local level	More aggressive ESCO initiative
Building Energy Codes	IECC 2006 and ASHRAE 2004; update to IECC 2009	Adopt IECC 2012 (or 30% beyond IECC 2006)	Same as Scenario Two plus 50% by 2020
Appliance Efficiency Standards	Federal standards from EISA 2007, DOE revises standards to minimize lifecycle costs (LCC)	Same as Scenario One plus additional state standards	Same as Scenario Two
Energy Efficiency RD&D Initiative	None	None	Energy efficiency RD&D initiative
Consumer Education and Outreach***	SCC-directed initiative	Expanded SCC-directed initiative	Same as Scenario Two
Low-Income Efficiency Programs***	Current policies	Expanded low-income programs	Same as Scenario Two

CHP and manufacturing initiative are included in the EERS.
**The assessment of demand response potential is covered in the next chapter and in Appendix D.
*** These policies/programs are included in the policy recommendations, though ACEEE does not estimate costs and electricity impacts.