

COMMONWEALTH OF VIRGINIA  
STATE CORPORATION COMMISSION

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At the relation of the

STATE CORPORATION COMMISSION

CASE NO. PUE-2007-00049

Ex Parte: In the matter of determining a recommended mix of programs, including demand side management (DSM), conservation, energy efficiency, load management, real-time pricing, and consumer education, to be implemented in the Commonwealth to cost-effectively achieve the energy policy goals set in § 67-102 of the Code of Virginia to reduce electric energy consumption

COMMENTS OF FAIRFAX COUNTY STAFF

Fairfax County staff welcomes the opportunity to submit comments in furtherance of the goal of reducing energy consumption in the Commonwealth. To assist the Commission in its task of submitting finding and recommendations to the Governor and General Assembly, these comments respond to the first four statutory criteria related to the Commission report set forth in the 3<sup>rd</sup> Enactment Clause of SB 1416.

Cost-effectively reducing electric energy consumption by ten percent over the next 15 years is an achievable goal. The experiences of other states demonstrate that energy savings can be realized with current or improved levels of service. An appropriate mix of programs, in conjunction with a sustained commitment to reducing electric energy consumption, can ensure that Virginia realizes not only the significant energy savings associated with this goal but related economic and environmental benefits as well.

***(i) Determine whether the ten percent electric energy consumption reduction goal can be achieved cost-effectively through the operation of such programs, and if not, determine the appropriate goal for the year 2022 relative to base year of 2006.***

The experiences of California and other states demonstrate that with a Virginia-specific portfolio of well-designed energy efficiency programs, the Commonwealth can achieve significant cost-effective reductions in electric consumption with current or improved levels of service.<sup>1</sup>

The National Action Plan for Energy Efficiency (NAPEE) Report documents state and utility successes nationwide in achieving cost-effective energy efficiency measures for each customer class and should be a key resource for the Commonwealth in devising a plan to cost-effectively reduce energy consumption to targeted levels.<sup>2</sup> The programs in the NAPEE Report have broad-based support, as demonstrated by the composition of the NAPEE Leadership Group. The Leadership Group is comprised of more than 50 organizations, including gas and electric utilities, utility regulators, state agencies, energy users, consumer advocates, energy efficiency organizations, and others. Sixteen other associations and groups have provided input to the NAPEE. The Leadership Group is currently co-chaired by Jim Rogers, President and Chief Executive Officer of Duke Energy, and Marsha Smith, Commissioner, Idaho Public Utilities Commission and 1st Vice President, National Association of Regulatory Utility Commissioners. Supporting the work of the NAPEE and its Leadership Group are the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (EPA).

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<sup>1</sup> In determining the cost-effectiveness of energy efficiency programs, the Commonwealth should look to either the Total Resource Cost (TRC) test or Societal Test. The TRC test, which appears to be used by the majority of energy-efficiency programs nationwide, accounts for the total costs and benefits of a program, including the avoided costs of electricity generation. The Societal Test adds to the TRC test certain societal benefits, such as environmental adders (e.g., reduced air pollution and water consumption) and national security considerations. These and other tests are described in the NAPEE (Chapter 6) and *The California Standard Practice Manual: Economic Analysis of Demand Side Programs and Projects*, <http://drrc.lbl.gov/pubs/CA-SPManual-7-02.pdf>.

<sup>2</sup> National Action Plan for Energy Efficiency Report (July 2006), [http://www.epa.gov/solar/pdf/napee/napee\\_report.pdf](http://www.epa.gov/solar/pdf/napee/napee_report.pdf).

The NAPEE Report defines “energy efficiency” as using less energy to provide the same or improved level of service to the energy consumer in an economically efficient way. Its use of the term is expansive and includes using less energy at any time, including at times of peak demand through demand response and peak shaving efforts.<sup>3</sup> This definition appears to encompass each of the measures identified in SB1416: demand side management (DSM), conservation, energy efficiency, load management programs, and consumer education. These comments use the term “energy efficiency” as used by in the NAPEE Report.

While the cost of energy efficiency programs necessarily varies with the program, the NAPEE Report concludes that the majority of organizations “are acquiring energy efficiency resources for about \$0.03/lifetime kWh for electric programs.”<sup>4</sup> Further,

[i]n many cases, energy efficiency is being delivered at a cost that is substantially less than the cost of new supply – on the order of half the cost of new supply. In addition, in all cases where information is available, the costs of saved energy are less than the avoided costs of energy.<sup>5</sup>

These conclusions are based on a review of energy efficiency programs throughout the country, including those operating in Arizona, California, Colorado, Connecticut, Idaho, Massachusetts, Minnesota, Montana, Nevada, New York, Oregon, Rhode Island, Texas, Vermont, Washington, and Wisconsin.

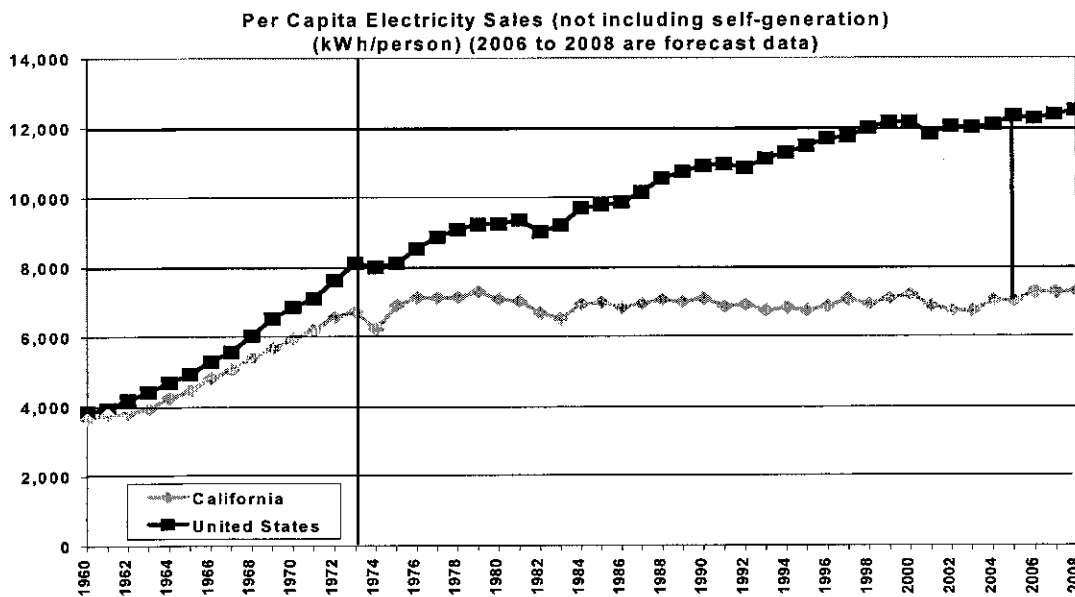
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<sup>3</sup> NAPEE at 1-1, fn. 1.

<sup>4</sup> NAPEE at 6-18. According to the EAI, Virginia’s current average residential cost per kWh is \$0.0824. *Energy Information Administration, Average Retail Price of Electricity to Ultimate Consumers by End-Use Sector, by State* (June 13, 2007), [http://www.eia.doe.gov/cneaf/electricity/epm/table5\\_6\\_a.html](http://www.eia.doe.gov/cneaf/electricity/epm/table5_6_a.html).

<sup>5</sup> NAPEE at 6-18.

California's experience is illustrative. Over the last 30 years, California's energy efficiency measures have kept per-capita energy use relatively flat even as per-capita energy use in the rest of the nation increased by 45%.<sup>6</sup>



The energy savings associated with California's energy efficiency measures are well-documented. Through 2003, California's energy efficiency programs have saved more than 40,000 GWh of electricity and 12,000 MW of peak demand, equivalent to more than two dozen 500-MW power plants.<sup>7</sup> In 2004, the California Public Utilities Commission (California PUC or CPUC), concluding that energy-efficiency programs could save California up to an additional 30,000 GWh of energy over the next decade, adopted aggressive electricity savings goals through 2013.<sup>8</sup>

<sup>6</sup> California Energy Commission, "Integrated Energy Policy Report" (December 2005) (CEC 2005 IEP Report) at 4, [http://www.energy.ca.gov/2005\\_energypolicy/index.html](http://www.energy.ca.gov/2005_energypolicy/index.html); Commissioner Art Rosenfeld, "Improving Energy Efficiency: U.S. and West Coast" (December 2006), Slide 6, [http://www.energy.ca.gov/commission/commissioners/rosenfeld\\_docs/index.html](http://www.energy.ca.gov/commission/commissioners/rosenfeld_docs/index.html).

<sup>7</sup> CEC 2005 IEP Report at 70.

<sup>8</sup> *Id.*

These energy savings have been accompanied by substantial cost savings for California's residential and business consumers, estimated at \$4.1 billion from 1997 to 2004 alone. These savings are attributable to the lower costs of energy efficiency vis-à-vis generation. According to California's energy and regulatory commissions, "[t]he average cost of energy efficiency programs is about half the cost of base load generation . . . These programs save energy at a cost of less than 3 cents per kWh, less than half the per kWh cost of building new generation facilities."<sup>9</sup>

Given these substantial energy and cost savings, it is not surprising that California has designated energy efficiency as its highest priority energy resource. As California's Public Utility and Energy Commissions agree, energy efficiency is as a "proven, cost-effective resource" that lowers energy costs, supports economic development, improves the reliability of the state's electricity system, and protects the environment.<sup>10</sup>

***(ii) Identify the mix of programs that should be implemented in the Commonwealth to cost-effectively achieve the defined electric energy consumption reduction goal by 2022, including but not limited to demand side management, conservation, energy efficiency, load management, real-time pricing, and consumer education.***

The following programs focus on the residential sector and thus comprise only a part of a recommended mix of program to reduce electric energy consumption. Any mix selected should be re-evaluated periodically to assess the continuing validity of the component programs and to identify additional programs that may be appropriate to implement.

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<sup>9</sup> California Public Utilities Commission and California Energy Commission, "Energy Efficiency: California's Highest Priority Resource," (August 2006) at 4, [ftp://ftp.cpuc.ca.gov/Egy\\_Efficiency/CalCleanEng-English-Aug2006.pdf](http://ftp.cpuc.ca.gov/Egy_Efficiency/CalCleanEng-English-Aug2006.pdf).

<sup>10</sup> *Id.*

**1) *Encourage replacement of inefficient incandescent bulbs with compact fluorescent lights (CFLs) through consumer education and incentives***

Only ten percent of the energy used by a traditional incandescent light bulb produces light; the rest is given off as heat. Implementing programs that encourage Virginia consumers to replace energy-inefficient incandescent bulbs with CFLs will result in significant energy savings and reductions in emissions.<sup>11</sup>

According to U.S. Census Bureau, there were approximately 2,699,173 households in Virginia in 2000. If each household replaced just five incandescent light bulbs with CFLs, Virginians would save over \$132 million in annual energy costs and prevent greenhouse gases equivalent to the emissions of more than 182,000 cars.<sup>12</sup> Replacing even just one bulb has significant benefits. The federal government estimates that if every American home replaced just one light bulb with an EnergyStar qualified bulb, the nation would save enough energy to light more than 3 million homes for a year and more than \$600 million in annual energy costs, and prevent greenhouse gases equivalent to the emissions of more than 800,000 cars.<sup>13</sup> Because CFLs currently contain a small amount of mercury, retailers should be encouraged to recycle the lamps, much like office-supply retailers recycle printer-toner cartridges.

**2) *Expand weatherization and energy efficiency/air-infiltration programs***

The Virginia Department of Housing and Community Development administers a weatherization program that assists homeowners and tenants in sealing air-leaks with insulation, caulking, and weather-stripping, and in repairing leaky duct systems. These programs, which

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<sup>11</sup> A number of jurisdictions are considering or implementing mandatory phase-outs of incandescent bulbs. For example, in early 2007 the Australian government announced plans to phase out incandescent bulbs by 2010. Information regarding the Australian phase-out is available at <http://www.greenhouse.gov.au/energy/cfls/index.html>.

<sup>12</sup> See <http://quickfacts.census.gov/qfd/states/51000.html> and <http://www.onebillionbulbs.com/Stats/State/VA>. See also <http://green.yahoo.com/18seconds/>, which tracks CFLs sold by state and zip code.

<sup>13</sup> See [http://www.energystar.gov/index.cfm?c=cfls.pr\\_cfls](http://www.energystar.gov/index.cfm?c=cfls.pr_cfls).

have strict eligibility requirements, should be expanded to make weatherization more affordable for all.

Currently, to be eligible for any type of weatherization assistance, households must meet income and citizenship criteria and must contain at least one vulnerable person.<sup>14</sup> The reach of these programs could be expanded by revising eligibility restrictions for grant programs and establishing both no-cost and low-cost financing for those outside minimum income limits.

**3) *Provide additional incentives for replacement of energy-inefficient HVAC and appliances***

Virginia has taken a number of steps to encourage consumer purchase of energy-efficient appliances and heating, ventilation, and air-conditioning (HVAC) systems. It should build on this foundation by establishing additional financial incentives for consumers to purchase residential energy-saving appliances and HVAC systems. These additional incentives should include:

- *Expanding sales tax exemptions:* The General Assembly has designated October “Energy Awareness Month” and the first week in October “Energy Conservation Awareness Week.” It also has approved a limited sales tax exemption for the purchase of certain EnergyStar products with a sales price of up to \$2,500.<sup>15</sup> To meaningfully influence consumer behavior, the exemption should be extended beyond the current four-day mid-October window. Options include a sales tax exemption applicable during the entire “Energy Awareness Month” of October, seasonal exemptions tied to the heating and cooling seasons, or a quasi-permanent exemption.

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<sup>14</sup> See <http://www.dss.virginia.gov/benefit/ea/weatherization/index.html> and [http://www.dhcd.virginia.gov/HousingPreservationRehabilitation/Weatherization\\_FAQs.htm](http://www.dhcd.virginia.gov/HousingPreservationRehabilitation/Weatherization_FAQs.htm).

<sup>15</sup> VA Code § 58.1-609.1.18.

- *Broadening tax credits:* Individuals purchasing for their own use certain energy-efficient tangible personal property such as central air conditioners, furnaces, and programmable thermostats are entitled to a tax credit under VA Code § 58.1-322. The credit is an amount equal to 20 percent of the sum, not to exceed \$500 in each taxable year. A credit of this type should be made available to small-scale landlords (those exempted from the Virginia Residential and Tenant Landlord Act pursuant to VA Code § 55-248.5.A.10), so that the energy and cost savings attributable to energy efficiency will be extended to an additional class of both consumers and residential housing.
- *Establishing rebates and other incentive programs:* A number of states offer incentives to consumers that purchase energy-efficient appliances and HVAC systems, including rebates, reward programs, and no-cost or low-cost financing. Virginia could emulate a number of these incentive programs. A rebate program, like those offered by the District of Columbia (D.C.) and Pennsylvania, could be particularly effective. The D.C. Energy Office is offering \$150, \$100 and \$50 rebates to all D.C. electric customers who purchase Energy Star-rated clothes washers, refrigerators and window air conditioners between June 1, 2006 and September 7, 2007.<sup>16</sup> Under Pennsylvania's "Energy Independence Strategy," Pennsylvania consumers can earn rebates of up to \$100 each on high-efficiency refrigerators and room air conditioners when they turn in their old, inefficient air conditioners and

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<sup>16</sup> "District Residents Can Receive \$150 by Purchasing EnergyStar Appliances" (June 19, 2007) [http://www.dcpsc.org/pdf\\_files/hottopics/Press\\_Release\\_2.pdf](http://www.dcpsc.org/pdf_files/hottopics/Press_Release_2.pdf); see also [http://www.dceo.dc.gov/dceo/cwp/view,a,11,q,604012,dceoNav\\_GID,1897.asp](http://www.dceo.dc.gov/dceo/cwp/view,a,11,q,604012,dceoNav_GID,1897.asp).



refrigerators — two of the biggest energy-using appliances in the home — for new models that use at least 15 percent less energy.<sup>17</sup>

#### ***4) Authorize voluntary peak-shaving programs for residential air conditioning***

A number of electric utilities have introduced voluntary residential “appliance cycling” peak-shaving programs. These programs achieve demand reductions without direct customer involvement – other than an initial agreement to participate – and should be introduced in Virginia.

Toronto Hydro Corporation (THC) operates a residential air-conditioner recycling program called “PeakSaver.”<sup>18</sup> Alliant Energy offers a similar program in parts of Wisconsin. As Alliant describes it:

When you sign up for the program, we'll send a contractor to install a small, radio-activated power switch on or near your outdoor central air conditioner at no cost to you.

If temperatures and humidity levels skyrocket, our System Control Center monitors the demand for electricity. If it escalates to a critical point, a “system emergency” or “peak alert” is announced, and we'll turn on the radio signal that activates the switch on your air conditioner. The switch will cycle your air conditioner on and off, while the fan continues to circulate the cooler, drier air already in your home. You'll stay cool and comfortable, your electric bill stays low and the environment can breathe a little easier.

The program runs from June 1 to September 30. We will cycle air conditioners off only in the case of a system emergency. The duration of each session is typically six hours at a time and never on weekends or holidays.<sup>19</sup>

In exchange for their agreement to participate, customers may receive a sign-up bonus, earn bill credits when usage is actually reduced, and/or qualify for prizes.

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<sup>17</sup> “With ‘Energy Independence Strategy,’ DEP Secretary Says Energy Efficient Appliances, Solar Power Will Become More Affordable” (May 15, 2007), <http://www.state.pa.us/papower/cwp/view.asp?Q=463130&A=11&pp=3>.

<sup>18</sup> See <http://www.torontohydro.com/electricsystem/powerwise/peaksaver/residential/index.cfm>.

<sup>19</sup> “Keep your cool – and your cash!” <http://www.alliantenergy.com/docs/groups/public/documents/pub/p014690.hcsp>.

Cycling programs focused primarily on residential air conditioning have multiple benefits. According to a 2005 study requested by the New Jersey Board of Public Utilities, appliance cycling programs in New Jersey were determined to 1) provide reliability value in the PJM capacity market; 2) reduce energy costs by shifting demand from high-cost hours to low-cost hours; 3) improve PJM market efficiency by increasing price-responsive load; and 4) increase transmission and distribution (T&D) reliability and possibly avoid T&D costs.<sup>20</sup>

***5) Authorize utilities to offer a “10/10 Program” that rewards residential customers for achieving conservation goals***

In addition to “PeakSaver,” Toronto Hydro Corporation’s conservation and demand management portfolio includes the “Summer Challenge” (or the “10/10 Program”), which provides a 10 percent rebate on a customer’s electricity bill if consumption is reduced 10 percent during the summer months of July and August. As a result of this popular program, almost 154,000 customers received a 10 percent rebate after the 2006 Summer Challenge ended.<sup>21</sup> This type of simple demand-reducing measure should be implemented in Virginia.

THC has established an eight-week 2007 Summer Challenge open to both residential and business customers. The only effort required is customer conservation; no special metering or monitoring is necessary. According to the company’s website, a residential customer with metered electricity service is automatically enrolled so long as he or she:

- has an active 12-month electricity billing history at his or her current address as of July 1, 2007;

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<sup>20</sup> “Appliance Cycling Evaluation: Final Report” (Sept. 2, 2005) <http://www.policy.rutgers.edu/cecep/images/Reveiw%20of%20NJ%20Appliance%20Cycling%20Program%20Sept%202005.pdf>.

<sup>21</sup> Staff Report for Action on Toronto Hydro Corporation 2006 Annual General Meeting, (June 1, 2007) at 17, <http://www.toronto.ca/legdocs/mmis/2007/ex/bgrd/backgroundfile-5036.pdf>.

- has an active electricity account at the same premises for the full program season (from July 1 to August 31, 2007); and
- has had actual electricity meter readings within 75 days prior to July 1st and 75 days post August 31st in both 2006 and 2007.<sup>22</sup>

Those customers who fulfill the 2007 Summer Challenge will receive a bill credit shortly after the program ends on August 31.<sup>23</sup>

**6) *Initiate a rulemaking to authorize prepaid electric utility service for residential customers***

Prepaid electric utility service, which allows customers to monitor and control their service, encourages conservation and should be made available to all residential consumers.

In the early 1990s, Salt River Project (SRP), a long-time provider of electricity and water to the metropolitan Phoenix, Arizona area implemented a prepaid service that it called the “SRP M-Power” payment plan. Though initially targeted to credit-challenged customers, M-Power has expanded across SRP’s residential base and now counts over 50,000 customers and is adding 10,000 customers a year. According to SRP, over 90 percent of SRP’s M-Power customers believe they are using energy more efficiently as a result of their participation. SRP reports that the average M-Power customer saves about 12.8% on electricity usage over customers on other payment plans.<sup>24</sup>

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<sup>22</sup> “Toronto Hydro Summer Savings,” [https://www.torontohydro.com/electricsystem/powerwise/conservation\\_programs/summer\\_savings/index.cfm](https://www.torontohydro.com/electricsystem/powerwise/conservation_programs/summer_savings/index.cfm) and [https://www.torontohydro.com/electricsystem/powerwise/conservation\\_programs/summer\\_savings/faq/index.cfm](https://www.torontohydro.com/electricsystem/powerwise/conservation_programs/summer_savings/faq/index.cfm).

<sup>23</sup> The Pennsylvania Public Utility Commission notes that the program “includes a potential for a Lost Revenue Adjustment Mechanism to address the loss of distribution revenues.” PA PUC Docket No. M00061984, *Investigation of Conservation, Energy Efficiency Activities and Demand Side Response by Energy Utilities and Ratemaking Mechanisms to Promote Those Efforts*, 36 Pa.B. 6485 (Oct. 21,2006), <http://www.pabulletin.com/secure/data/vol36/36-42/2086.html>

<sup>24</sup> “M-Power Milestone: 50,000 Customers and Growing,” <http://www.srpnet.com/payment/mpower/50000.aspx>.

SRP's prepaid electric service customers receive a battery-operated display unit (the User Display Terminal, or UDT) to plug into an electrical outlet. The UDT serves two purposes: it communicates with the meter and also tracks the customer's usage in both kilowatt hours and dollars. Service is purchased at the customer's convenience by mail or via reusable smart cards that can be replenished at SRP PayCenters located around the Phoenix metropolitan area. Purchases are transferred to the home system when the smart card is inserted into the UDT.

Prepaid electric service is being introduced in other jurisdictions. The Sacramento Municipal Utility District, the nation's sixth-largest customer-owned electric utility, recently initiated a pilot prepaid program. In early 2007 the Public Utility Commission of Texas initiated a rulemaking governing prepaid retail electric service.<sup>25</sup>

***7) Initiate a proceeding with the goal of establishing time-varying pricing options and a phased mass deployment of advanced metering infrastructure (AMI)***

Giving residential customers both accurate price signals regarding energy costs and the ability to respond to those signals has proven to reduce peak demand and promote conservation. Pilot programs further establish that participating customers welcome the opportunity to make meaningful choices about their electric energy consumption. Residential customers therefore should be offered a range of pricing options, from the static pricing of traditional fixed rates or time-of-use rates to dynamic pricing plans that include critical peak pricing (CPP) variants and real-time pricing (RTP).

In a December 2006 Order, the Illinois Commerce Commission (ICC) approved a retail residential RTP program for Commonwealth Edison Company (ComEd), concluding that anticipated demand reductions from that program will produce a net economic benefit to

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<sup>25</sup> See PUCT Project No. 33814, *Rulemaking Concerning Prepaid Electric Service Using a Customer Premise Prepayment Device*, available at <http://interchange.puc.state.tx.us/WebApp/Interchange/application/dbapps/login/pgLogin.asp>.

residential customers of \$8.7 million as well as economic benefits it could not presently quantify.<sup>26</sup> These additional benefits, attributable to anticipated demand reductions, include improved system reliability, power quality, and market power mitigation. Further, the ICC concluded that the potential for demand reductions will result in net economic benefits for *all* residential customers, not just those purchasing service under ComEd's program.

The ICC had previously approved a ComEd RTP pilot, the "Energy-Smart Pricing Plan," for a three-year period. Results of that pilot demonstrated energy and cost savings attributable to dynamic pricing. In 2003, program participants decreased their electricity usage by 4.2 percent and saved 19.6 percent on their electric bills. In 2005, on the hottest day of the summer, total electricity consumption among participants was 15 percent less than that predicted if those customers did not have access to the RTP program.<sup>27</sup>

In January 2007, the D.C. Public Service Commission approved Pepco's two-year residential smart-meter pilot program, "SmartPowerDC." The 2,250 participants will be billed under one of three pricing options: hourly pricing, critical peak pricing, or critical peak rebate. Under all three options, the generation charge on a customer's bill is calculated using time-varying prices. In addition, smart thermostats will be provided to half the customers.<sup>28</sup>

Dynamic pricing is an essential component of the "Smart Grid" anticipated by regional transmission organization PJM Interconnection:

The Smart Grid concept envisions digital automation of the entire power supply system – from generator to consumer – to improve reliability and efficiency. The

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<sup>26</sup> Order, ICC Docket No. 06-0617, *Commonwealth Edison Company Proposed Revisions to Rate BES-H, Basic Electric Service-Hourly Energy Pricing* ("Rate BES-H") (Dec. 20, 2006) at 12-13, available at <http://www.icc.illinois.gov/e%2Ddocket>.

<sup>27</sup> *Id.* at 6.

<sup>28</sup> Formal Case No. 1002, *In the Matter of the Joint Application of PEPCO and the New RC, Inc. for Authorization and Approval of Merger Transaction*, Order No. 14166 (Jan. 12, 2007), available at <http://www.dcpsc.org/commorders/commorder.asp>.

network would provide the open architecture, “plug-and-play” technology needed for the full end-to-end integration of the power system. In essence, the Smart Grid is about enabling the right information, at the right time to the right people. . . . In this new state, real-time information signals will . . . deliver pricing signals to end-use smart devices, such as household appliances, plug-in hybrid electric cars and energy storage systems . . . .<sup>29</sup>

PJM’s Smart Grid concept is not an anomaly. The GridWise Alliance – of which PJM is a member – is a consortium of public and private stakeholders “aligned around a shared vision . . . of an electric system that integrates the infrastructure, processes, devices, information and market structure so that energy can be generated, distributed, and consumed more efficiently and cost effectively; thereby achieving a more resilient, secure and reliable energy system.”<sup>30</sup>

Dynamic pricing, however, requires the deployment of advanced metering infrastructure (AMI). Pennsylvania has been recognized as having the highest penetration rate of advanced meters of the 50 states, followed by Wisconsin, Connecticut, Kansas, and Idaho.<sup>31</sup> California is poised to join their ranks, as both Pacific Gas & Electric (PG&E) and San Diego Gas & Electric (SDG&E) have received CPUC approval to deploy smart meter technology on a widespread basis.<sup>32</sup> SDG&E’s AMI deployment plan includes replacing 1.4 million electric meters and 900,000 gas meters by 2011. PG&E plans on retrofitting 5.1 million electric meters and 4.2 million gas meters by 2011.

The California PUC has been analyzing the business case for AMI over the last several years and has concluded that AMI deployment using current technology is cost effective when

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<sup>29</sup> “Bringing the Smart Grid Idea Home” (2007), at 2 (emphasis omitted), <http://www2.pjm.com/documents/downloads/strategic-responses/letters/smartgrid.pdf>.

<sup>30</sup> See <http://www.gridwise.org>.

<sup>31</sup> Electric Power Research Institute, “Advanced Metering Infrastructure” (Feb. 2007), <http://www.ferc.gov/EventCalendar/Files/20070423091846-EPRI%20-%20Advanced%20Metering.pdf>. Information regarding MADRI is available at <http://www.energetics.com/madri/index.html>.

<sup>32</sup> Information on the PG&E and SDG&E smart-meter programs are available at [http://www.pge.com/customer\\_service/ami/](http://www.pge.com/customer_service/ami/), and <http://www.sdge.com/smartmeter2/index.shtml>, respectively.

both operational and demand-response benefits are considered. SDG&E's business case analysis, submitted to the CPUC in early 2006, estimated costs of \$635 million and \$762 million in operational (\$471 million) and demand response (\$325 million) benefits.<sup>33</sup> PG&E's business case analysis showed that approximately 90 percent of the project costs would be covered through operational savings, on a net present value basis, with demand response benefits accounting for the remaining 10 percent.<sup>34</sup> AMI deployment, moreover, need not mean substantial rate increases. To fund its initiative, PG&E anticipated that rate increases would cost the average residential customer with both gas and electric service between \$0.49 and \$0.99 per month for the first five years (or about 1 percent); customers, however, could expect rate reductions after this initial period due to program savings.<sup>35</sup>

**8) *Encourage the installation of micro-generation projects by funding and advertising the Solar and Wind Energy System Acquisition Grant Fund***

Micro-generation projects (10 kW or less) installed by residential customers reduce electricity demand. In conjunction with applicable net metering provisions, these projects also have the potential to provide a source of surplus energy. Virginia's Solar and Wind Energy System Acquisition Grant Fund, VA Code § 67-1000 *et seq.*, creates an incentive framework to encourage the installation of residential micro-generation projects. Virginia should take the next step and fund this program.

Massachusetts' experience offers insights into the potential of this type of grant fund. Massachusetts has implemented a "Small Renewables Initiative" (SRI) that provides rebates for

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<sup>33</sup> "Advanced Metering Infrastructure (AMI) Update (June 2006), [http://www.cpuc.ca.gov/static/hottopics/1energy/ami\\_update+june+2006.pdf](http://www.cpuc.ca.gov/static/hottopics/1energy/ami_update+june+2006.pdf).

<sup>34</sup> Final Opinion, *Application of Pacific Gas and Electric Company for Authority to Increase Revenue Requirements to Recover the Costs to Deploy an Advanced Metering Infrastructure*, A-05-06-028 (July 20, 2006) at 10, [http://www.cpuc.ca.gov/word\\_pdf/FINAL\\_DECISION/58362.pdf](http://www.cpuc.ca.gov/word_pdf/FINAL_DECISION/58362.pdf)

<sup>35</sup> "Pacific Gas and Electric Company's SmartMeter™ Proposal Approved by California Public Utilities Commission," (July 20, 2006), [http://www.pge.com/news/news\\_releases/q3\\_2006/060720a.html](http://www.pge.com/news/news_releases/q3_2006/060720a.html).

solar, wind and small hydro micro-generation projects up to 10 kilowatts.<sup>36</sup> SRI rebates are restricted to customers and sites that are customers of a Massachusetts investor-owned utility and are provided on a “first come – first served” basis. The SRI anticipates distributing approximately \$3.6 million of rebates each year through FY2010.

**9) *Establish targeted consumer education programs to address identifiable needs***

Residential consumers are being inundated with conservation and energy efficiency messages. Educational programs should help consumers respond to these messages in a way that allows them to take meaningful action.

A significant first step would be to create a “one-stop” website that displays available state information and resources in a consumer-friendly format. The Virginia Department of Mines, Minerals and Energy (DMME) currently lists links to a variety of helpful resources on its web-page, “Consumer Information on Energy Efficiency and Conservation,” but the presentation – much of its alphabetical – may be daunting.<sup>37</sup> A separate site would be preferable, much like those operated by Efficiency Vermont (<http://www.encyvermont.com/pages/>) and the California Energy Commission (<http://www.consumerenergycenter.org/>). These websites offer simple navigation tools and an organizational scheme that makes it easy to find information on key topics. The site should be advertised using multiple avenues, including public service announcements and radio spots (similar to those introducing “811”), bill inserts or a message on a utility bill envelope, school hand-outs, and cooperative efforts with home-building and appliance stores.

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<sup>36</sup> [http://www.masstech.org/renewableenergy/small\\_renewables.htm](http://www.masstech.org/renewableenergy/small_renewables.htm).

<sup>37</sup> “Consumer Information on Energy Efficiency & Conservation,” <http://www.dmme.virginia.gov/DE/ConsumerInfo/consumerinfo.shtml>



Surveys or other mechanisms may be appropriate to identify underserved areas of consumer education and to determine how best to allocate educational resources.

Targeted education programs should be undertaken as various programs are implemented. To ensure cost-effectiveness, objectives should be clearly identified and efforts should focus on achieving those objectives. For example, a program to encourage the purchase of CFLs or EnergyStar products should reflect the information and placement needed to influence the purchasing decision. Meanwhile, a program advertising the availability of time-of-use rates should include information explaining the pricing rationale and structure.<sup>38</sup>

***(iii) Develop a plan for the development and implementation of recommended programs, with incentives and alternative means of compliance to achieve such goals.***

The Commonwealth will need to take a series of steps to achieve its goal of reducing energy consumption. Initial steps should include developing and implementing low-cost high-potential activities, particularly broad-based programs that promote or mandate the efficient use of energy. Several examples of such residential-sector programs that can be readily implemented are described in response to Question (ii), above. In addition, the Commonwealth should support micro-generation and renewable projects and begin preparing for AMI deployment and the introduction of dynamic pricing. Cumulatively, these types of programs should help Virginia cost-effectively achieve a ten percent reduction in electric energy consumption, or more, by 2022.

In developing a plan, the Commission may find it helpful to refer to resources such as the National Action Plan for Energy Efficiency, described in response to Question (i), above.

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<sup>38</sup> Many utilities already offer this type of information on their websites. See, e.g., Orange & Rockland's "Time-of-Use Rate," <http://www.oru.com/programsandservices/incentivesandrebates/timeofuse.html>.

Resources developed or used by other state agencies also may prove helpful, including the following two California websites:

**California: California Measurement Advisory Council (CALMAC)**

(<http://www.calmac.org/>)

The CALMAC website describes itself as providing a forum for the development, implementation, presentation, discussion, and review of regional and statewide market assessment and evaluation (MA&E) studies for California energy efficiency programs and demand response conducted using Public Goods Charge funds. Site resources include more than 700 MA&E research reports dating from 1990 that can be found in CALMAC's searchable database. Downloadable files are available for evaluations of programs fielded since 1994. The site also maintains a Toolkit page, which supplies key documents needed by evaluators, and links to sites related to energy efficiency program evaluation.

**California: Database for Energy Efficiency Resources (DEER)**

(<http://eega.cpuc.ca.gov/deer/>)

DEER has been jointly developed by the California Public Utilities Commission and the California Energy Commission, with support and input from investor-owned utilities and other interested stakeholders. DEER contains information on selected energy-efficient technologies and measures. The DEER provides estimates of the energy-savings potential for these technologies in residential and nonresidential applications. The database contains information on typical measures – those commonly installed in the marketplace – and data on the costs and benefits of more energy-efficient measures.

***(iv) Determine the entity or entities that could most efficiently deploy and administer various elements of the plan.***

States have adopted different models to administer and deploy energy efficiency programs. The particular model Virginia selects must meet its defined objectives and identified constraints.

Frequently, state regulatory commissions delegate administration of energy efficiency programs to the utilities they regulate, with a state agency (alone or in conjunction with one or more state agencies) responsible for governance and program oversight. Although this model raises concerns regarding evaluation, measurement, and verification (EMV), it may be the simplest to implement and a good starting point for Virginia.

Over time, Virginia may chose to modify the model it initially selects, either to revise the model in its entirety or to incorporate aspects of other state models. Examples of models that Virginia could draw on include:

- *New York*: The New York Public Service Commission approves a multi-year operating program for a state energy research and development company, the New York State Energy Research and Development Authority (NYSERDA). NYSERDA administers the Energy \$mart Program, which currently encompasses more than 40 energy efficiency programs.<sup>39</sup>
- *Oregon*: The Oregon Public Utility Commission oversees the Energy Trust of Oregon (ETO), a non-profit program administrator. ETC receives the majority of public purpose funds – 73.8 percent. Housing and Community Services receives 16.2 percent of the funds, which it uses to administer low-income housing projects, including weatherization programs. Education Service Districts receive the remaining 10 percent of the funds to improve energy efficiency and purchase renewable energy. “Self direct” large commercial and industrial customers can implement their own programs and then deduct the cost from the conservation and renewable resource portion of their public purpose charge obligation to utilities.<sup>40</sup>
- *Vermont*: The Vermont Public Service Board (VPSB) contracts with three entities: (1) Efficiency Vermont, an Energy Efficiency Utility (EEU) that administers and implements energy-efficiency programs; (2) a Contract Administrator, which oversees the EEU’s performance and resolves disputes; and (3) a Fiscal Agent, which

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<sup>39</sup> Information regarding NYSERDA is available at <http://www.nysesda.org/default.asp>.

<sup>40</sup> Econorthwest, Report to Legislative Assembly on Public Purpose Expenditures, Final Report (12/26/06), [http://oregon.gov/PUC/electric\\_restruc/purpose/013007PPCSpendingReport.pdf](http://oregon.gov/PUC/electric_restruc/purpose/013007PPCSpendingReport.pdf)

collects and disburses Energy Efficiency Charge (EEC) Funds. In addition to selecting these contractors, the VPSB establishes the total EEU program budget, approves the EEU's Annual Plans, determines EEC rates, and reports annually to the Legislature.<sup>41</sup>

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With an appropriate mix of programs and a sustained commitment to reducing electric energy consumption, the Commonwealth can achieve the goal of cost-effectively reducing electric energy consumption by ten percent over the next 15 years. Fairfax County staff appreciates the opportunity to submit these comments and looks forward to working with the State Corporation Commission and interested parties in this matter.

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<sup>41</sup> "Efficiency Vermont: About Us," <http://www.encyvermont.com/pages/Common/AboutUs/>.