Southern Alliance for Clean Energy
www.cleanenergy.org

Comments of
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First the good news, there are many opportunities to increase energy efficiency within the Tennessee Valley area. This is in part, due to new technologies that have come on line that can reduce demand. However, it is also the result of a serious lack of effort at energy efficiency over the past 20 years.

I applaud TVA's Board for placing energy efficiency higher on the priority list in the 2007 TVA Strategic Plan and for setting some near term targets for gathering information that has been lacking, i.e., looking at the technical potential for the TVA region. It is important that TVA look towards setting into motion organizational structures and a corporate culture that places energy efficiency on equal footing with supply side options, i.e., new power plants.

Two important and related processes will go a long way to make energy efficiency a durable institution within TVA and with its customers both wholesale and retail, as well as, other important stakeholders. The first step is to form an **Energy Efficiency Advisory Council** made up of various engaged customers and stakeholders. I know that TVA has looked at establishing such council, but has delayed committing to this process due to federal red tape. While it may take several months to get started, the value of regular consultation and the ongoing exchange of ideas is a critical ingredient to success. TVA cannot successfully reach real leadership targets in demand reduction without strong support from its customers and other Valley stakeholders. Getting key leaders to meet on regular bases will not only inform TVA staff, but will, more importantly, expose other stakeholders to both the challenges and opportunities that will come with TVA leadership in energy efficiency. The second is to formalize a public Integrated Resource Planning (IRP) process within TVA. All investor owned utilities surrounding TVA submit regular IRPs on 1 or 3 year intervals. These plans also know as portfolio management plans.

Portfolio management refers to energy resource planning that incorporates a variety of energy resources, including supply-side (e.g., traditional and renewable energy sources) and demand-side (e.g., energy efficiency) options. The term "portfolio management" has emerged in recent years to describe resource

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planning and procurement in states that have restructured their electric industry. However, the approach can also include the more traditional integrated resource planning (IRP) approaches applied to regulated, vertically integrated utilities.

U.S. EPA. *Clean Energy-Environment Guide to Action: Policies, Best Practices, and Action Steps for States*, April 2006. Available at http://epa.gov/cleanenergy/stateandlocal/guidetoaction.htm.

I have no doubt that staff leadership at TVA performs some measure of these activities in the internal operation of the agency. However, I'm also confident that little, if any, external review is done on the assumptions used to build these plans nor on the outcomes. It is also unclear how rigorous the process is due to the current supply imbalance, which would have been caught and corrected if IRP analysis had been performed in the past ten years. The TVA Act gives the TVA board a regulatory function. As regulators, the Board should follow the lead of neighboring state regulators and encourage an interactive IRP process to assist in narrowing the key issues facing the agency and review different approaches to long range planning. One function of the **Energy Efficiency Advisory Council** could be to review the IRP and assure that demand side management or energy efficiency receives equal footing with supply side options like large expensive power plants.

Set a Goal

TVA should set a short-term (2-3 years) goal of meeting one percent of annual sales with energy efficiency. This goal should advance to 2 percent of annual sales within 10 years. Meeting a one percent goal would allow energy efficiency to compound over the life of the programs. Therefore meeting one percent a year for five years would mean TVA should be meeting approximately five percent of sales in year five. A quick summary of our analysis below shows that the TVA region is well below this target.

Tennessee Valley Authority
Energy Efficiency Accomplishments in Perspective 2005-06

In 2005-06, the Tennessee Valley Authority and its distributors achieved energy savings of 0.04% of annual sales. Compared to peer utilities, the TVA is at the "back of the pack." Leading utilities are achieving energy savings of 0.4% to well in excess of 1% of annual sales.

Among the leaders are utilities from every region of the United States except the Southeast and Mid-Atlantic regions, public and investor-owned utilities, utilities with high load growth and negative load growth, utilities with high rates and utilities with low rates. There is ample proof

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that motivated utilities can achieve high levels of energy savings using energy efficiency programs on a reliable and consistent basis.

Utility		Savings	Sales		Growth
(1)	Massachusetts Electric	1.60%	12,990,328	(27)	-15%
(2)	PG&E	1.32%	76,817,131	(8)	7%
(3)	Edison International	1.31%	78,863,143	(7)	6%
(4)	Connecticut Light & Power	1.09%	22,109,070	(19)	-7%
(5)	Puget Energy	0.81%	21,091,533	(20)	4%
(6)	Sacramento Municipal Utility	0.75%	10,799,230	(30)	4%
(7)	Alliant Energy	0.72%	26,605,902	(15)	0%
(8)	MidAmerican Energy	0.60%	23,389,319	(18)	5%
(9)	Sierra Pacific Resources	0.51%	29,827,109	(13)	3%
(10)	Long Island Power Authority	0.46%	18,353,670	(22)	-4%
(11)	IDACORP	0.41%	13,939,314	(25)	5%
(12)	Xcel Energy	0.41%	86,584,655	(5)	2%
(13)	PacifiCorp	0.34%	51,797,336	(9)	5%
(14)	Hawaiian Electric Industries	0.30%	10,115,832	(31)	1%
(15)	PSE&G	0.21%	34,354,438	(10)	-2%
(16)	FP&L	0.19%	103,652,914	(4)	2%
(17)	FirstEnergy	0.15%	31,711,206	(11)	-1%
(18)	TECO Energy	0.14%	19,025,064	(21)	1%
(19)	Salt River Project	0.12%	26,249,636	(16)	7%
(20)	Wisconsin Energy	0.12%	28,855,158	(14)	-2%
(21)	Consolidated Edison	0.09%	26,100,714	(17)	-11%
(22)	New York Power Authority	0.07%	14,887,670	(23)	-1%
(23)	E.ON	0.05%	30,661,216	(12)	-2%
(24)	Progress Energy	0.04%	82,723,457	(6)	-1%
(25)	**Tennessee Valley Authority**	**0.04%**	**163,587,097**	**(1)**	**1%**
(26)	UniSource Energy Corp	0.02%	10,812,839	(29)	4%
(27)	AES	0.02%	14,715,841	(24)	-3%
(28)	Santee Cooper	0.01%	11,616,626	(28)	1%
(29)	Southern Company	0.01%	161,333,527	(2)	4%
(30)	Pennsylvania Electric	0.01%	13,577,726	(26)	2%
(31)	Duke Energy	0.01%	125,416,094	(3)	0%

Methods

These data are from the Energy Information Administration Form 861, 2005-2006. The utilities were selected as follows:

- Individual utility data are consolidated into parent companies where available data permitted. The TVA and its distribution partners are consolidated.
- Sales data are annual retail sales and do not include wholesale sales to unrelated parties or T&D losses. Savings include energy savings classified as either energy efficiency or load management programs.
- Utilities with 2006 annual sales in excess of 10 million MWh were selected. Utilities with average energy savings due to energy efficiency or load management programs for 2005-06 at amounts below 0.005% were excluded.
- The "growth" figure cited above is a simple comparison of 2006 sales to 2005 sales. A true growth rate would evaluate a somewhat longer period of time to average out fluctuations due to weather or other short-term factors.

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Although Form 861 data were validated for several utilities with a second source, it is widely known that some utilities underreport or fail to report energy efficiency data on Form 861. Thus, although the data from Form 861 are the only national-scale database on energy efficiency performance, they are not necessarily definitive.

TVA should Aggressively Support Recycled Energy and Combined Heat and Power

There are a number of industries in the Tennessee Valley who could more efficiently capture waste heat and convert it into usable electric power and/or design industrial processes to recycle energy to generate power. Last month Board of Directors of the National Association of Regulatory Utility Commissioners (NARUC) passed the following resolution:

Resolution to Encourage the use of Combined Heat and Power, including the Recycling of Waste Energy

WHEREAS, The generation of electricity from fossil fuels typically produces twice as much waste heat as electricity, as measured in BTUs; *and*

WHEREAS, There are many opportunities to capture and utilize the energy that is currently released as waste heat from power plants or other industrial processes; *and*

WHEREAS, Through "combined heat and power" (CHP), exhaust heat from power generation or an industrial process is recaptured through applications such as district heating and cooling, industrial uses, or combined-cycle generation, in order to achieve significant system efficiency, *and*

WHEREAS, further energy recycling can be achieved through recovery of industrial waste materials such as waste gases and black liquor which have residual energy that can be combusted to generate electric power and/or useful thermal energy; *and*

WHEREAS, according to the U.S. Department of Energy, CHP currently contributes nearly 85 GW to the grid and has the potential for additional generating capacity in excess of 130 GW; *and*

WHEREAS, The United States is far behind other industrialized nations such as Germany, Japan, and China in reliance upon CHP and waste energy recovery technologies, which obtain more than twice as much of their total power capacity from such technologies as does the U.S.; *and*

WHEREAS, The deployment of CHP and waste energy recovery technologies increases generation efficiency, reduces fossil fuel consumption, enhances generation diversity, and has the potential to improve system reliability, decrease line losses, reduce grid congestion, and reduce emissions of air pollutants and greenhouse gases, *and*

WHEREAS, under Part E, Section 374, of the Energy Policy and Conservation Act, as

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amended in 2007, State regulatory authorities are required to consider requests from owners and operators of CHP or waste energy facilities to sell their net excess power through such practices as: mandatory purchase of net excess power by utilities; transport by utilities of net excess power for direct sale to third parties; transport of such power over private transmission lines, where appropriate; or an alternate arrangement that is mutually satisfactory to the utility and the facility; *and*

WHEREAS, State regulatory authorities can further encourage cost-effective investment in CHP and waste energy recovery projects by:

1) ensuring that standby rates reflect any net system benefits of CHP and waste energy recovery technologies;

2) establishing standardized interconnection rules that include clear and uniform processes and technical requirements for connecting distributed generation systems to the electricity grid; and

3) addressing the utility's incentive under traditional ratemaking to maximize throughput within its system; *now therefore be it*

RESOLVED, That the Board of Directors of the National Association of Regulatory Utility Commissioners, convened at its 2008 Winter Meetings in Washington, DC, encourages commissions to consider policies to facilitate the deployment of cost-effective CHP and waste energy recovery technologies by advancing wholesale market options for the sale of net excess power from such projects, and retail market options in states where permitted; *and be it further*

RESOLVED, That commissions consider the adoption of regulatory policies that protect consumers while addressing barriers to increased use of CHP related to standby rate design; interconnection rules; and traditional utility revenue recovery mechanisms; *and be it further*

RESOLVED, That commissions, where feasible, allow owners and operators of CHP and waste energy recovery facilities to be appropriately compensated for any benefits provided to electrical generation and transmission systems.

Sponsored by the Committee on Energy Resources and Environment
Approved by the NARUC Board of Directors February 20, 2008

TVA should adopt a Clean Energy Standard Offer Program (CESOP) to remove market barriers and encourage recycled energy. This will bring additional capacity to the TVA system and increase the overall efficiency in the Tennessee Valley. A draft of such a standard offer is below more information can be found at Recycled Energy Development (http://www.recycled-energy.com/)

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Draft TVA Clean Energy Standard Offer Program (CESOP)

TVA will encourage development of recycled energy and other clean technology with a 'Clean Energy Standard Offer Program' (CESOP) incorporating the following principles:

1. TVA will offer 20-year CESOP contracts for electricity generated by qualifying clean technology facilities, as defined in Subtitle E of the 2007 Energy Independence and Security Act. The offer shall be available to any new generating plant within TVA's territory [or broader definition].

2. There shall be two CESOP rate structures, depending on whether the power is generated from industrial waste energy or from new combined heat and power generation that meets the annual efficiency tests.

    - Industrial Waste Energy shall receive a flat rate per megawatt-hour (MWh) equal to 80% of the long-run marginal costs of delivered power from a new coal plant that meets current environmental standards, including generation and transmission capital avoidance, line loss avoidance, operating costs and margin, with a monthly inflation adjustment for the non-fuel operating expenses that are subject to inflation.

    - New qualifying CHP plants burning any fossil fuel, purchased biomass or biomass-derived fuel shall receive a fixed payment per MW of demonstrated capacity equal to the avoided fixed capital cost of delivered power from a new combined cycle gas turbine plant, plus a payment per MWh equal to the long-run avoided operating cost of delivering an incremental MWh from a new gas turbine combined cycle plant and a fuel payment equal to 80% of the delivered heat rate from a new combined cycle gas turbine plant, paid at the current month's delivered index price for natural gas in TVA's territory. This CESOP heat rate is estimated to be 6153 Btus HHV, assuming a new CCGT plant has a heat rate of 7,000 Btu's at the central plant, divided by .91 to correct for average line losses, and then multiplied by 80% to produce a savings to TVA.

3. TVA shall be responsible for design, construction, commissioning and operation of the interconnection facilities connecting each qualifying CESOP power plant to the grid. All other capital costs shall be born by the CESOP project.

4. The host facility of each CESOP power plant shall continue to purchase electric service from the local distribution company at applicable rates for like customers, and will not be liable for any backup or standby charges.

5. TVA shall, where it deems appropriate, contract for voltage support and power factor correction services from the recycled energy generation plants, paying 80% of the long-run avoided capital costs of capacitance and inductance banks, and 80% of the calculated savings in line losses due to the voltage support supplied by the individual CESOP plant. TVA shall bear any capital cost additions to the plant associated with monitoring and remotely controlling the CESOP plant's generation power factor.

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6. TVA will work with each CESOP power plant to qualify the output for clean energy credits, including sale of renewable energy credits, satisfaction of RPS standards, and voluntary or future mandatory greenhouse gas emission reduction credits in return for 20% of the value of such credits. In the event that TVA desires or is required to purchase such credits, the CESOP plants will agree to sell such credits to TVA at 80% of the market price.

7. TVA will work with the State governments in its territory and with its distribution company customers to modify any rules or regulations that block the local generation contemplated in this CESOP.

8. This offer is initially limited to 1,500 megawatts of new nameplate capacity, but TVA may extend and possibly modify the CESOP terms offered to new power plants based on the experience gained in the first tranche of CESOP contracts.

9. Eligibility for a CESOP contract extends to all new power plants within the defined territory that commenced construction after the date of this CESOP offer, upon the provision to TVA of proof that the applying plant has received all required environmental and construction permits, has 100% project financing commitments with no contingencies other than signing the CESOP contract, and self-certifies that the proposed plant will meet the CESOP efficiency requirements.

10. All CESOP plants shall be required to provide complete fossil energy efficiency records certified by a reputable third party expert within 30 days of the close of each contract year. Should a plant with a CESOP contract fail to meet the annual efficiency tests for the prior year, and also fail to achieve cumulative overall efficiency from the start of the plant operations consistent with the CESOP standards, the rates paid for the power shall be reduced by 20% until such time that the plant owner provides a third-party certification that the plant has met the CESOP efficiency standards for the prior 12 months.

11. Each CESOP plant shall be required to provide at least 80% of name plate capacity during the peak system hours during each contract year, as defined in advance of that year by TVA. Should a CESOP plant fail to meet this test, the rates shall be reduced by 20% until such time that the plant owners demonstrate that the plant has met the 80% on peak test for the prior 12 months.

12. The CESOP shall terminate on the earlier of four years from its effective date, or when the contracted megawatts reach the limit specified above.

TVA Should Aggressively Promote Home Energy Rating Services

All of us, generally, know the miles per gallon (MPG) of our automobiles. Yet in our homes, which use a significant amount of energy, very few people can even estimate their average rate energy use. Home Energy Ratings Systems (HERS) ratings give us an objective way to rate our homes. A HERS rating is an evaluation of the energy efficiency of a home, compared to a computer-simulated reference house of identical size and shape as the rated home that meets minimum requirements of the International Energy Conservation Code (IECC). The HERS rating results in a score between 0 and 100, with the reference house assigned a score of 80. From this point, each 5% reduction in energy usage (compared to the reference house) results in

a one-point increase in the HERS score. Thus, an ENERGY STAR qualified new home, required to be significantly more energy-efficient than the reference house, must achieve a HERS score of at least 86.*

HERS ratings involve the analysis of a home's construction plans and at least one on-site inspection of the home. The construction plan review allows the home energy rater to attain technical information such as orientation, shading area, proposed SEER rating, insulation levels, etc. The on-site inspection includes a blower door test (to test the leakiness of the house) and a duct test (to test the leakiness of the ducts). Results of these tests, along with inputs derived from the construction plan review, are entered into a computer simulation program that generates the HERS score and the home's estimated annual energy costs.

*Typically, ENERGY STAR qualified new homes are at least 30% more energy-efficient than standard homes. However, depending on the rigor of an individual state's energy code, this percentage may vary.

TVA should promote HERS rating and tie all incentives to getting a rating and driving increase home efficiency performance. For more information see

http://www.natresnet.org/

The Southern Alliance for Clean Energy supports energy efficiency as the quickest most cost effective strategy for meeting TVA's demand challenges, reducing emissions and preparing the agency for a carbon-constrained world.
TVA should fulfill its historic mission as a "living laboratory", actively solving important carbon problems facing the nation's utility industry. It is our hope that making TVA region more energy efficient will be an important legacy of your board leadership. The Southern Alliance for Clean Energy stands ready to serve as a constructive partner in this essential endeavor.

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