Governor's Task Force on Energy Policy

Lead by Example (LBE) Sub-Committee Recommendations

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General Issues:
State Energy Expenditures (2007)

- In 2007, Tennessee spent $151-178 million on energy. This is likely to increase to more than $200 million in 2008, due to higher fuel prices.
- Buildings ($129 million) –
  - General Government (25 agencies): $62 million
  - University of Tennessee: $32 million
  - The Board of Regents: $35 million
- Vehicle Fleets($22-$49 million) –
  - Fuel costs (General Services and TDOT): $22 million
  - Employee vehicle reimbursement costs: $27 million*

* Employee vehicle reimbursement costs include cost for fuel, maintenance and vehicle depreciation.

General Issues: Organization

- Organizational Changes Needed
- Responsibility for energy issues is distributed among numerous entities and individuals; 27 agencies are currently involved.
- The state should consolidate energy activities with strong centralized leadership to coordinate and oversee energy policy development and implementation, including LBE activities, retrofits, and operations.
- The state will need to reorganize staffing resources to better manage state energy use and to lead by example to assist citizens and businesses in better managing their use.
- The state needs to elevate and incentivize energy issues in state government and better coordinate among agencies and campuses as well. NGA noted at last Task Force meeting that states waste more than a third of their energy.
- The state should take advantage of potential partnerships with non-profit energy groups, other states, TVA, ORNL, EPA, DOE, and private sector.

State Energy Costs (2007) by Department/Agency

DEPARTMENT / AGENCY NAME	TOTAL
JUDICIAL BRANCH	$872,081
DEPARTMENT OF STATE	$56,117
DISTRICT PUBLIC DEFENDERS	$70,225
COMPTROLLER OF THE TREASURY	$954
DEPARTMENT OF GENERAL SERVICES	$823,879
DEPARTMENT OF VETERANS AFFAIRS	$49,149
DEPARTMENT OF AGRICULTURE	$194,122
DEPARTMENT OF TOURIST DEVELOPMENT	$252,968
DEPT OF ENVIRONMENT AND CONSERVATION	$4,907,690
WILDLIFE RESOURCES AGENCY	$597,252
DEPARTMENT OF CORRECTION	$12,406,304
DEPARTMENT OF ECONOMIC AND COMMUNITY DEV	$264
DEPARTMENT OF EDUCATION	$1,280,709
DEPARTMENT OF COMMERCE AND INSURANCE	$215,682
DEPARTMENT OF LABOR	$3,972
DEPT.OF MENTAL HEALTH AND MENTAL RETARDATION	$3,296,476
DEPARTMENT OF MILITARY	$5,696,579
DEPT OF HEALTH	$16,555
DEPARTMENT OF MENTAL RETARDATION	$4,443,806
DEPARTMENT OF HUMAN SERVICES	$726,814
DEPARTMENT OF REVENUE	$1,437
TN. BUREAU OF CRIMINAL INVESTIGATION	$3,900
DEPARTMENT OF SAFETY	$198,845
DEPARTMENT OF CHILDREN'S SERVICES	$1,568,630
DEPARTMENT OF TRANSPORTATION	$3,495,440
FACILITIES REVOLVING FUND**	$20,970,613
TOTALS FOR GEN. GOVERNMENT	**$62,150,462**
TENNESSEE BOARD OF REGENTS	**$34,782,608**
UNIVERSITY OF TENNESSEE	**$32,075,093**
TOTALS FOR TBR & UT SYSTEM	**$66,857,701**
TOTALS FOR STATE (2007)	**$129,008,162**

State Buildings: Targets

- The state should set targets for energy use reduction in buildings.
- Targets should have an explicit baseline and should be aggressive but realistic.
- Proposed Target: Reduction of total energy use in state buildings by an average of 15% by 2011 and 25% by 2013, as compared to 2007 usage (on a btu per ft^2 basis).

State Buildings: Tracking & Reporting

- In general the state does not track its energy usage (certain agencies/institutions do track energy costs).
- Tracking and reporting energy usage are essential first steps in energy management.
- Energy usage in all state buildings should be tracked, benchmarked and reported at the building, campus, and department levels.
- Buildings should be separately metered where possible to enable energy tracking at the building level.

State Buildings: Retrofitting Existing Buildings

- The State should develop a strategy to identify, prioritize and retrofit cost-effective energy efficiency measures in all state owned buildings.
- The strategy should focus primarily on a comprehensive and audit-based "whole building" approach.
  - *Retrofits of the Andrew & Rachel Jackson state buildings in Nashville (1997-2004) resulted in a 42% electricity savings and 55% savings across all fuels. Total project cost was $4 million, and has resulted in annual savings of more than $800,000/year.*
- A limited number of prescriptive measures that are generally always very cost effective should be identified and implemented in all buildings as soon as possible. Possible examples:
  - LED exit signs
  - Compact screw-in fluorescent lighting

State Buildings:
Building Energy Retrofit Strategy Proposal

- The state should treat energy retrofits as an investment, allowing the energy saved to pay back the fixed loan.
- The state should develop a comprehensive and standardized plan to audit, design, construct, and implement building retrofits with a “whole building view” or “bundling” of energy retrofits.
  - This could be achieved by contracting with qualified energy service companies (ESCO’s).

State Buildings: Cost-Effectiveness Metric

- The current practice of requiring at least a 5-8 year payback is a barrier to better energy management; many other states utilize either longer payback periods (e.g. 15-20 years) or life-cycle costing.
- Current cost-effectiveness metric should be changed to allow for measures that are cost-effective over their expected useful lives. (Life cycle costing.)
- Many states require life-cycle cost analysis, including Arizona, Iowa and North Carolina.

State Buildings: New Construction

- The state's Sustainability Guidelines for new construction and other major capital improvements are in development, and contemplates requiring ASHRAE 2004 standard.
- The Sustainability Guidelines should be enhanced to require the pursuit of most or all cost effective energy efficiency measures above and beyond building codes
  - North Carolina requires energy performance in new state buildings to exceed ASHRAE 2004 standard by 30%
  - Rhode Island requires LEED certification plus all cost-effective energy efficiency

State Buildings: Equipment and Appliances

- The state should immediately require ENERGY STAR labeled products (where available) for all new appliance and equipment purchases for use in state buildings and campuses.
  - 17 states already require Energy Star purchasing.
- The state should evaluate the possibility of requiring agencies to purchase EPA Water Sense labeled products, where applicable.

State Buildings: Renewable Energy and Cogeneration

- The state should assess on an on-going basis opportunities to cost-effectively integrate renewable energy technologies (e.g., passive solar, solar water heating, photovoltaics, wind, and geothermal) into new and existing state buildings.
- Over the next year, the state should assess cogeneration/combined heat and power, and solar hot water heating opportunities at state buildings and campuses, and begin to implement these technologies where appropriate.
- Explore the feasibility of participation in TVA's Generation Partners program.

State Buildings: Leased Space

- Leased buildings confront different barriers to energy management than state-owned buildings.
- The state should develop a comprehensive strategy for reducing energy use in state-leased buildings.
- The strategy should include requirements and a methodology for fully incorporating energy costs in comparing and selecting lease options, and a way to ensure that leased buildings are operated as efficiently as possible.
- Leased space should be close to mass transit where available.

State Buildings: Building Operating Guidelines

- The state should promulgate energy guidelines for all state buildings and campuses to adhere to, including:
  - Summer and winter temperature settings;
  - Water heating temperatures;
  - Expectations for lighting and heating/cooling during unoccupied hours.
- Building managers should be given some flexibility for extenuating circumstances.

State Buildings: Funding and Staffing

- Full implementation of these recommendations will require funding as well as extensive initiative, coordination, and key professional staffing.
- A funding and staffing plan should be put together to establish the leadership and accomplish the recommendations.

Building: Questions & Comments?

Fleet Management: Fuel Demand and Fuel Supply

- State owns ~10,000 vehicles (85% GS and TDOT, 15% UT and Board of Regents).
- 2007 fuel expenditures for state fleet were $22 million (expected to be higher in 2008).
- Energy policy for fleet management involves reducing the amount of fuel used (demand) and substituting preferable fuels (supply) for petroleum.
- Reducing demand will save money and should be the state's first priority.

Fleet Management: Meeting 20% Petroleum Reduction Target

- State agencies should be required to meet the 2010 20% reduction target established in Public Chapter 489.
- Target should be met not just through supply changes via substitution of biofuels but also through reducing demand via energy efficiency and an overall reduction in fuel consumption.
- The state also should set a target for 2015 of an additional 25% reduction in petroleum use in state fleets.
- The state should identify a way to factor in net petroleum use when assessing the target to account for petroleum used in the production of biofuels.

Fleet Management:
Breakdown of Passenger Vehicles by Class

Vehicle Class	General Services	% of GS Fleet*	TDOT	% of TDOT Fleet*	Total	% of Total
Compact Sedan	10	< 1%	0	-	10	< 1%
Mid-Size Sedan	536	15%	244	27%	780	18%
Large Sedan	340	9%	5	< 1%	345	8%
Van (mini-, full size)	726	21%	112	13%	838	19%
SUV	586	17%	67	8%	653	15%
Pickup Truck	1324	38%	464	52%	1788	40%
Totals	3522	100%	892	100%	4414	100%

* % of GS/TDOT/Total includes passenger vehicles only

Fleet Management: Efficient Vehicle Purchases

- The state should increase its purchases of fuel efficient vehicles in every vehicle class, and expand its relatively small fleet of compact and sub-compact vehicles.
- Departments should be required to justify requests for any passenger vehicle larger than a compact.
- The state should incorporate fuel costs into new vehicle purchase decisions in every class using a “life cycle”-based method.
- Barriers to efficient vehicle purchases arising from timing of EPA mpg information and federal Flexible Fuel Vehicle requirements should be studied.

Fleet Management: Efficient Vehicle Dispatching

- The state should design and implement a system to dispatch the most efficient vehicles first from state motor vehicle pools.
- For example, compacts and mid-size vehicles should be utilized before SUVs.

Fleet Management: Reducing Vehicle Miles Traveled (VMT)

- Require state departments and campuses to develop plans to reduce VMT in state-owned vehicles through expanded use of technology (such as expanded video-conferencing capability) and coordinated ride-sharing and van pooling.
- Departments and campuses should also develop plans to reduce VMT from employee commuting to work, through mass transit use incentives, expanding park and ride options, car and van pooling, and telecommuting.
- Require departments and campuses to report their progress with VMT reduction efforts.

Fleet Management: Reimbursement for State Employee Owned Vehicles

- Tennessee spent $27 million in 2007 on personal vehicle reimbursement.
- The federal personal auto mileage reimbursement rate just increased from $.50 to $.58 per mile.
- The state should change its personal auto mileage reimbursement policy to reimburse on a sliding scale based on the private vehicle's rated mpg or at the level it costs to run the state fleet (significantly below the federal mileage reimbursement rate).
- Employees should be encouraged or required to use state vehicles first.

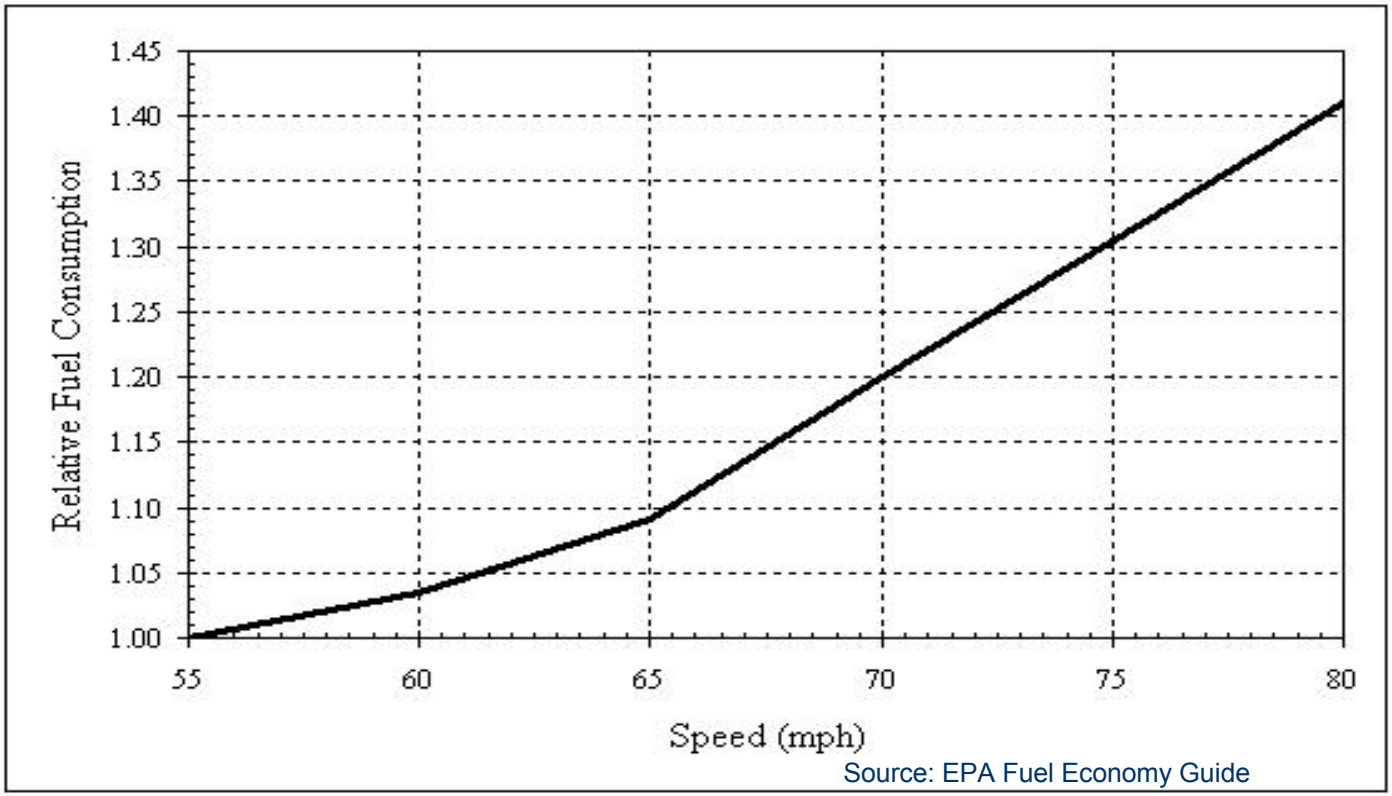
Fleet Management: Maintaining Vehicles for Energy Efficiency

- The state should regularly update and enforce across all departments and campuses best practice maintenance schedules and techniques to minimize energy use in vehicle operation including at a minimum:
  - Tires and tire pressure;
  - Vehicle tune ups; and
  - Air filter, and oil type and changes.

Fleet Management: Improving Driving Efficiency

- The state should provide information to state employees about efficient driving practices through state-of-the-art information campaigns and/or driver training programs.
- Efficient driving can increase gas mileage by 10% or more at little or no cost to the state.
- Inefficient driving occurs from unnecessary idling, speeds in excess of posted limits, jack rabbit starts, etc.

Fleet Management:
Fuel Consumption by Travel Speed



Source: EPA Fuel Economy Guide

Moving from a 65mph travel speed to 75mph causes fuel consumption to increase by 20%, for a typical light-duty vehicle

Fleet Management: The Impact of Motor Vehicle Idling

- A typical personal vehicle consumes 5-8% of its gas from idling, using 20 to 50 gallons of gas and emitting 570 to 920 pounds CO_2 per year.
- Assuming comparable figures for state vehicles, state fleet idling accounts annually for:
  - 532,000 to 852,000 gallons of gas (5-8% of total state fleet gas consumption)
  - $2.28 million to $3.66 million, based on current fuel prices
  - 5.7 to 9.2 million pounds CO_2 emissions
- Many states and cities have instituted idling-reduction policies for all government vehicles.
- Reducing state vehicle idling by 20% would lead to savings of $457,000-$730,000 (By 50%: $1,142,000-$1,183,000).

Fleet Management: Ensuring Use of Alternative Fuels

- State employees rarely refuel state-owned flex-fuel vehicles with E-85.
- The state should expand E85 and B20 refilling pumps strategically throughout the state.
- The state should better align managers and employees incentives to utilize the refilling pumps.
- The state should explore development of “on-site” package biodiesel facilities utilizing waste cooking oil and grease for diesel use.

Fleet Management: Monitoring and Reporting

- The state should design and implement a data-based monitoring system for state vehicles to ensure maximum compliance with vehicle related efficiency and alternative fuel policies and procedures.

Fleet Management: Additional Points

- This presentation is directed at on-road light duty vehicles, but huge energy savings opportunities exist for off-road vehicles, and for trucks and other heavy duty vehicles.
- The state should examine opportunities for energy savings from shipping state-owned goods.
- The state should explore the early retirement and replacement of less efficient vehicles.

Conclusion

- The state must elevate energy issues and create a new energy order in Tennessee.
- The state should lead by example and reduce the more than $150 million in annual state energy expenditures (and rising).
- To accomplish this a laser-focus and re-organization must be put in place.
- There is much to gain in reducing energy use, expenditures, CO_2 and other air pollutants, and much to lose if we wait.