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North Carolina Petroleum Displacement Plan Program

Presentation for the
House Select Committee on Energy Independence and Alternative Fuels

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NC Solar Center

- Created in 1988, now part of the College of Engineering at NCSU
- Clearinghouse for information, training, technical assistance, deployment, demonstration and applied research in

  transportation * solar * wind * buildings * policy *
- Funded through Grants, Contracts, State Appropriated Funding
- **PDP program: NCSC measures and analyzes progress and reports the results to the State Energy Office**

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Today's Topics

- Background of the PDP
- 2011 Summary Results
- Significant Accomplishments
- Summary of Recommendations

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PDP- Program Requirements

* All State agencies, universities, and community colleges that have State-owned vehicle fleets shall develop and **implement plans to achieve a twenty percent (20%) reduction or displacement of the current petroleum products consumed by January 1, 2016.**

- The plan may not impede mission fulfillment of the agency.
- "Fleet" consists of more than 10 motor vehicles designed for highway use.
- Specialty vehicles (e.g. those used for educational or emergency purposes) are subject to ten percent (10%) reductions.
- Nov 1st DOC/SEO reports to the Joint Legislative Commission on Governmental Operations.
- Reports include vehicle and fuel use data, other efforts to reduce petroleum use.

**Original requirement was included as special provision in FY 04-05 state budget, extended last session until 2016 Section 19.5(c) of S.L. 2005-276 (pg 222)*

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PDP - Program Requirements

Agencies report annually by September 1st to the NC Solar Center/NCSU who prepare report for Dept. of Commerce State Energy Office

- 37 reporting organizations
- 60+ historically exempt due to small size
- Total petroleum use in baseline year: **26.2** million gallons*
- Petroleum reduction goal: **4.6** million gallons**
- School buses in NC are county-titled, exempt

*Includes adjustments (equal to the percentage increase in mileage) from ten organizations that justified their expanded fleet use

** The more than 6,000 emergency/educational vehicles are only required to reach 10% displacement, dropping the total fleet goal to 17.5% of the baseline petroleum use

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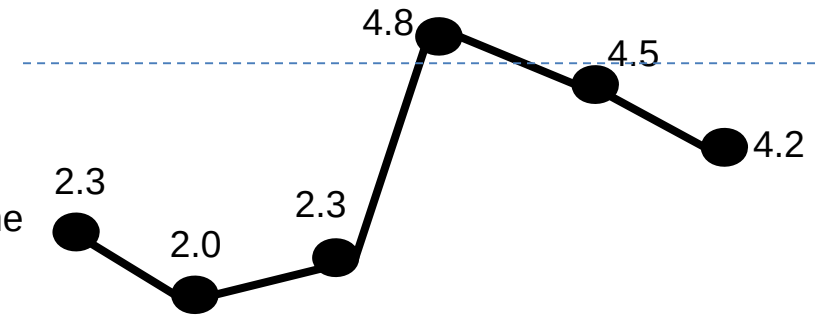
PDP Highlights

Petroleum displaced compared to 04-05 baseline (*millions of gallons*):



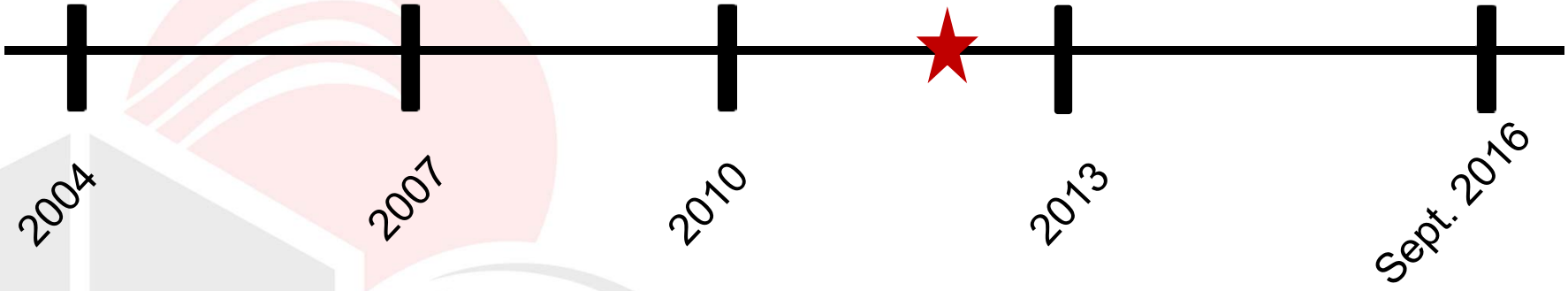
Displacement goal: 4.6 million gallons

Session Law 2005-276 requires 20% petroleum reduction in state fleet by 1/1/10

Deadline extended by S.L. 2009-451, to 9/2011

Deadline extended by S.L. 2011-145, to 9/2016

Current end date for PDP



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State Vehicles in the PDP count

	FY04-05 Baseline year	FY10-11	
Vehicle Types	#	#	% change
Gasoline	16,295	12,376	-24%
Hybrid	98	137	40%
Flex-fueled Vehicles	6042	9570	58%
Comp Natural Gas	14	4	-71%
Diesel	4,698	5,141	9%
Propane	192	130	-32%
Electric	14	239	1,607%
Total	**27,353**	**27,597**	1%

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Quantified Success: PDP Accomplishments

Total petroleum use in FY2010-11 was 21.9 million gallons (MG), a reduction of 4.2MG or 16% (of adjusted baseline)

- ✓ 4.85% of the total petroleum displacement (PD) came from increased E10 use compared to the baseline year
- ✓ 4.75% PD came from biodiesel use
- ✓ - 0.2% was added due to a decrease in CNG and propane use
- ✓ 0.6% PD came from an increase in E85 use
- ✓ 4.64 % came from conservation (correlated to reduced mileage)
- ✓ 1.4% came from fuel efficiency

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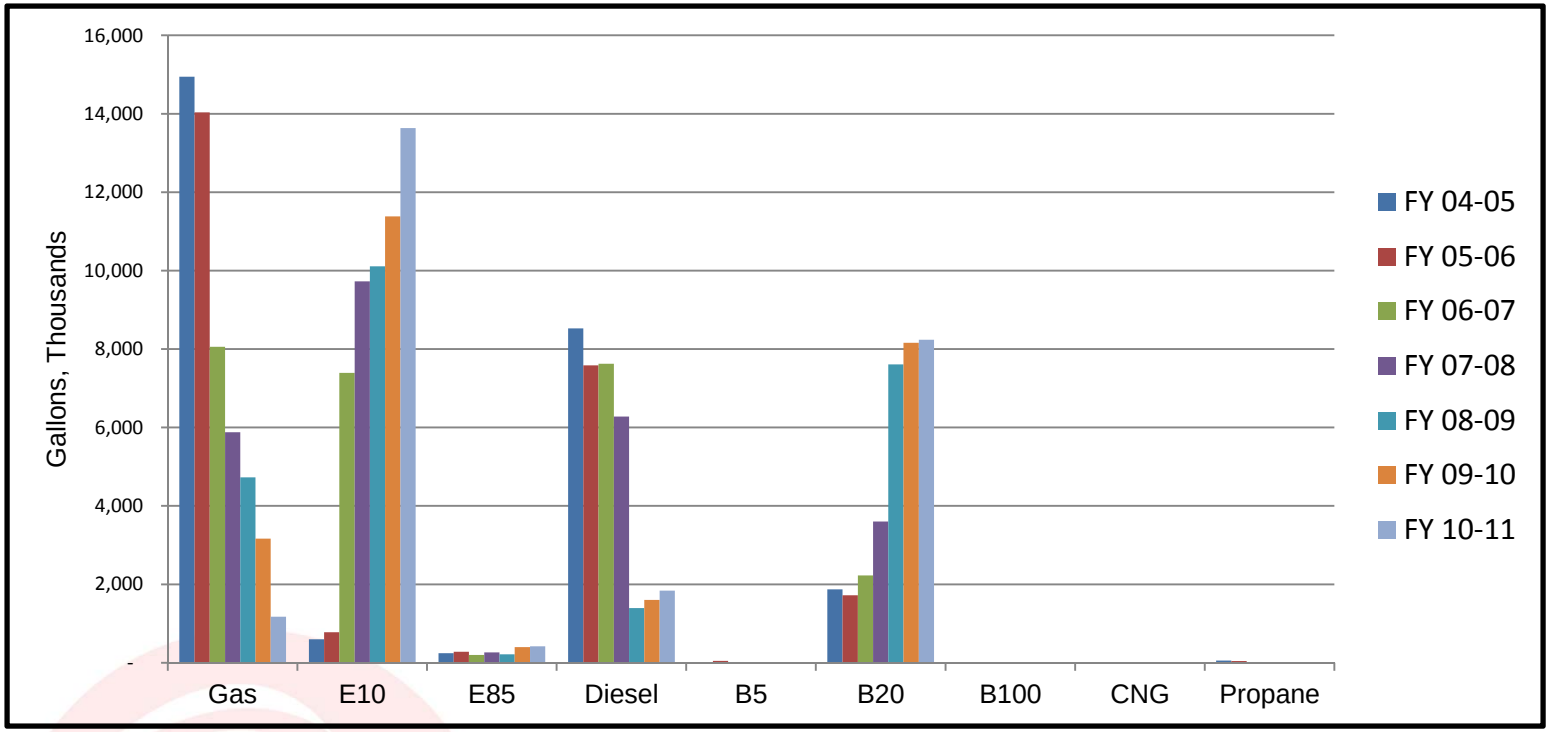
Factors working against petroleum displacement in FY10-11 compared to **FY09-10**:

- Increased mileage
- Increased total fuel use
- Increased use of petroleum, in particular petro-diesel
- Less dramatic increase in E85 use compared to other “lesser“ biofuel blends (no new collaborations between departments that have a fueling station and those that don’t)
- Near-stagnation in biodiesel use
- Possible decrease in fuel efficiency in largest fuel user that was excluded from fuel efficiency analysis
- Decrease in hybrid electric vehicles

Fuel Usage



- ✓ E10 increased by more than a factor of 20, from 600,000 gals to 13.6MG
- ✓ Biodiesel increased from 1.87MG to 8.26MG
- ✓ E85 use increased from 242,000 gals to 418,000 gals

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Conservation and Efficiency

Conservation: avoid use

- Primary indicator is ‘less miles driven’
- Also collect qualitative data to assess how ‘less miles driven’ was accomplished

Efficiency: do more using less

- Indicators are difficult to identify, measure
- “Miles per gallon” is simplest, but very limited
- Data for “Miles per gallon” measurement is not uniformly available

Conservation

- Combining trips
- Carpooling
- Adjusting routes
- Video and tele-conferencing
- Public Transit
- Biking or Walking
- Staffing Adjustments

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Efficiency

- Elimination of unnecessary idling
- Lower speeds and slower accelerations
- Using overdrive gears and cruise control
- Removing excess weight

- Proper maintenance
- Purchasing hybrids and more efficient conventional vehicles
- Choosing proper vehicle for the task

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Models for Success

- While some struggle other organizations have exceeded goals.
- UNC Asheville, NCDENR, NC Department of Corrections, and several community colleges continued to eclipse their displacement goals.
- How did they do it and others haven't yet? Institutional support is critical and structural barriers to success are real.

Recommendations

- **Expand use of E85 refueling to provide for the state's E85-capable flex-fuel vehicles (FFVs).** FFVs are at an all-time high, up 51% since FY04-05, while use of E85 has not kept pace. There is significant opportunity to expand use without costly or complex changes to fleet operations. As of Sept 2011, the Alternative Fuel Revolving Fund (AFRF) hads over $500,000 from the sale of Energy Policy Act credits earned from E85 use.

- **Expand support for and revise the PDP**. Funding for a full-time PDP position or specific appropriation for PDP report coordination will facilitate better PDP tracking and implementation among state agencies, enable increased interdepartmental coordination, more in-depth cost benefit analyses of various alternative fuel and advanced vehicle technology options, etc.

- **Require departments to adopt a centralized/standardized system for tracking and reporting fuel use, vehicle count, and mileage.**

- **Cabinet and Executive Office support will reinforce the importance of the PDP**. One example is to revive and expand the NC Alternative Fuel Consortium, previously hosted by the State Energy Office.

Changes on the horizon

- Convert data tracking to more robust relational database
- Revise reporting organizations to include those that are no longer exempt (fleets that have grown to 10+ vehicles since the baseline year)
- Communicate with organizations throughout the year to enhance petroleum reduction planning efforts, inter-agency coordination
- Identify ways to improve data accuracy, especially relating to conservation and efficiency

Promising Opportunities

- Neighborhood Electric Vehicles: street legal up to 35 MPG, zero emissions, good for campuses, urban centers. As more full size EVs are available, state fleets can demonstrate use.
- Ethanol: already thousands of flex fuel vehicles in the fleet, using E85 in about half of the State's Flex Fuel vehicles would take us to PDP goal
- Biodiesel: universal usage is crucial to PDP success, benefits local economy as in-state fuel stocks develop
- Compressed Natural Gas (CNG) & Propane (LPG): Existing CNG stations are under-utilized, some companies install LPG fueling infrastructure in exchange for long-term fuel contract. Both offer significantly less fuel costs.