The Oklahoma First Energy Plan: A Pragmatic Path Forward

C. Michael Ming
Secretary of Energy
State of Oklahoma

Southern States Energy Board
Washington, DC

February 27, 2012
Figure 2.0 Primary Energy Consumption by Source and Sector, 2010
(Quadrillion Btu)

Source: EIA Annual Energy Review, 2010
Oklahoma Ranks 8th in Total Energy Production

Source: EIA Energy Production Estimates, 2009
The Process Of Developing The Energy Plan

1. Does it grow Oklahoma’s economy?
2. Does it create Oklahoma jobs?
3. Does it protect and improve Oklahoma’s environment?
4. Does it protect and improve the health of Oklahoma’s citizens?
5. Factoring in 3. & 4. above, does it provide reliable and affordable energy for Oklahomans?
6. Does it focus on Oklahoma’s unique human and natural resources?
7. Where are the opportunities to create leverage and synergy from our resource base?

Available for download at: www.governor.ok.gov
Oklahoma Primary Energy Flow By Source and Sector, 2009

Energy Inputs

- Natural Gas: 0.678 Quadrillion BTU (41.6%)
- Petroleum: 0.489 Quadrillion BTU (30.0%)
- Coal: 0.373 Quadrillion BTU (22.9%)
- Renewables: 0.089 Quadrillion BTU (5.5%)

1.630 Quadrillion BTU

Percent of Source

Percent of Sector

Demand Sectors

- Transportation: 0.421 Quadrillion BTU (25.8%)
- Industrial: 0.368 Quadrillion BTU (22.6%)
- Residential & Commercial: 0.124 Quadrillion BTU (7.6%)
- Electric Power: 0.717 Quadrillion BTU (44.0%)

Note: Data does not include energy exports or retail electricity sales and electrical system energy losses.

Source: EIA State Energy Data System (SEDS), 2009
Oklahoma Exports About Two-Thirds Of Its Natural Gas To Interstate Markets!

Oklahoma Net Energy Exports

Total Production: 2.571
Total Consumption (Est.): 1.630

Natural gas accounts for more than 80% of the energy produced in Oklahoma!

Source: EIA State Energy Data System (SEDS), 2009
Oklahoma Crude Oil & Natural Gas Production

Source: EIA, 2010
Renewables Provide About 5.5% Of Oklahoma Energy

- **Natural Gas**: 41.6%
- **Petroleum**: 30.0%
- **Coal**: 22.9%
- **Renewables**: 5.5%
- **Biomass**: 31.6%
- **Wind**: 29.5%
- **Hydroelectric**: 38.9%
- **Solar/PV & Geothermal**: ≤1%

Note: Data excludes net interstate flow of electricity

*Source: EIA State Energy Data System (SEDS), 2009*
Oklahoma Wind Capacity

Source: EIA Electric Power Annual, 2010; OK Dept. of Commerce, 2012
Oklahoma Electric Power Industry Profile

Source: EIA Electric Power Annual, 2010
Oklahoma Ranks Among The Top States For Affordable Electricity Prices

Source: EIA 2011, Average Retail Price of Electricity to Ultimate Customers, Form EIA-861
The Oklahoma First Concept

- Enhance all forms of Oklahoma energy production
- Create jobs and grow the economy
- Reduce dependence on foreign oil
- Make the energy system smarter and more efficient
- Protect the environment & human health
- Build new markets for Oklahoma natural gas
- Support local industry & attract new industry
- R&D: The Oklahoma Energy Initiative

Available for download at: www.governor.ok.gov
The Centerpiece, But Not The Only Piece

Natural Gas

- Rampable & Highly Efficient Power Generation
- Ultra Low Emissions
- Reliable, Affordable, Abundant, & Secure
- Transportation Fuel Diversity
- Renewables Integration
- High End Use Efficiency
- Distributed Generation & Combined Heat & Power

Rampable & Highly Efficient Power Generation
Ultra Low Emissions
Reliable, Affordable, Abundant, & Secure
Transportation Fuel Diversity
Renewables Integration
High End Use Efficiency
Distributed Generation & Combined Heat & Power
As Supply Grows, Price Remains Low & Stable

- Lower 48 supply has grown by 13.5 billion cubic feet per day since 2004, up 33%
  - Driven by horizontal shale and infrastructure development
  - Impact has been more stable pricing

Note: Natural gas price and range are for Henry Hub trading point
Source: Devon Energy Corporation
CNG: Providing The Chicken & The Egg

Memorandum of Understanding

This Memorandum of Understanding (MOU) serves as a framework to ensure that the state of [State Name] (hereinafter referred to as the “State”) will cooperate with other states to expedite the development and deployment of CNG vehicles and infrastructure. The MOU aims to encourage the purchase and use of CNG vehicles to reduce greenhouse gas emissions and improve air quality.

1. **Objectives**
   - To accelerate the adoption of CNG vehicles in the State.
   - To promote the use of CNG as a fuel for transportation.
   - To facilitate the development of CNG infrastructure.

2. **Parties Involved**
   - **State of [State Name]**
   - Other states as mutually agreed.

3. **Terms**
   - The State will work with other states to develop a regional approach to CNG vehicle deployment.
   - The State will provide technical assistance and resources to other states.
   - The State will encourage the use of CNG-powered vehicles in transportation projects.

4. **Implementation**
   - The State will establish a task force to coordinate efforts among participating states.
   - The task force will develop a plan for CNG vehicle deployment and infrastructure development.

5. **Duration**
   - The MOU will remain in effect for a period of [X] years or until mutually agreed upon.

6. **Signatories**

   - [State Name]
     - **Signature**
     - [Name]
     - [Title]

   - Other states
     - [State Name]
     - **Signature**
     - [Name]
     - [Title]
Economic/Environmental Benefits

• Economic:
  – In Oklahoma, transitioning 500 new state vehicle purchases to run on CNG could save the state as much as $345,000/year in fuel costs:
    • $3.00/gallon & $1.85/gge
    • 15,000 miles/year
    • 25 mpg

• Environment:
  – CNG as a replacement for gasoline in light duty vehicles reduces emissions:
    • CO by 90% - 97%
    • NOx by 35% - 60%
    • Virtually all PM
Meeting Infrastructure Needs

“Development of the Mississippian could bring more than 100,000 jobs to Oklahoma and Kansas over the next five years, with Oklahoma City being the hub for that growth.”

SandRidge CEO, Tom Ward
Advancing Oklahoma Renewable Target

Renewable Portfolio Standards (RPS) and Goals
29 states and D.C. have RPS policies; 9 states and 3 power authorities have nonbinding goals

Untapped Efficiency Potential

Among Western States, Oklahoma Ranks 4th In Terms Of Industrial Efficiency Potential - $890 Million Potential Savings With A 2.5%/year Energy Intensity Goal from 2012 – 2016

## Benchmarking & Improving State Buildings

**Oklahoma Department Of Central Services: An Energy Efficiency Success Story**

<table>
<thead>
<tr>
<th>Building</th>
<th>1-Jul-09 Energy Star Rating</th>
<th>1-Jul-10 Rating</th>
<th>1-Jul-11 Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allen Wright Memorial Library</td>
<td>88</td>
<td>90</td>
<td>91</td>
</tr>
<tr>
<td>Attorney General</td>
<td>73</td>
<td>77</td>
<td>77</td>
</tr>
<tr>
<td>Banking Commission</td>
<td>N/A</td>
<td>45</td>
<td>57</td>
</tr>
<tr>
<td>Construction &amp; Properties (LEED)</td>
<td>12</td>
<td>N/A</td>
<td>97</td>
</tr>
<tr>
<td>Connors/Hodge*</td>
<td>68</td>
<td>76</td>
<td>74</td>
</tr>
<tr>
<td>Denver Davison Courts</td>
<td>35</td>
<td>34</td>
<td>61</td>
</tr>
<tr>
<td>Dept. of Agriculture</td>
<td>35</td>
<td>84</td>
<td>89</td>
</tr>
<tr>
<td>Dept. of Transportation</td>
<td>69</td>
<td>68</td>
<td>76</td>
</tr>
<tr>
<td>Jim Thorpe</td>
<td>77</td>
<td>76</td>
<td>83</td>
</tr>
<tr>
<td>Kerr-Edmondson</td>
<td>87</td>
<td>90</td>
<td>91</td>
</tr>
<tr>
<td>Sequoyah/Will Rogers*</td>
<td>80</td>
<td>84</td>
<td>87</td>
</tr>
<tr>
<td>State Capitol</td>
<td>82</td>
<td>88</td>
<td>89</td>
</tr>
</tbody>
</table>

*The Nation’s First Energy Star Certified Capitol Building!*

**Source:** Oklahoma Department of Central Services, 2011
Advancing Oklahoma’s Qualified Workforce

Learn more at www.OKJobMatch.com
R&D: The Oklahoma Energy Initiative

- CO₂ EOR
- Wind Forecasting
- Unconventional Natural Gas & Oil Resources
- Renewable Integration
- Advanced Biofuels
- Energy System Optimization
- Energy, Water, & Environment
Moving Forward

- Wind/Gas Partnership
- Combined Heat & Power (CHP)
- Energy Efficient Building Codes (IECC)
- Hydraulic Fracturing Chemical Disclosure (OCC RM No. 201200005)