



Realizing San Antonio's Energy Future Some Systems Perspectives

*TEXAS - A Model for Economic and Job Growth
Through Clean Energy*

National Association of State Energy Officials

Les Shephard

The University of Texas at San Antonio



San Antonio – On the Move!

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Policom Corporation 2011 Annual Economic Assessment 366 U. S. Metropolitan Areas

Texas Has Four Metroplex Areas in Top 15 Nationally

- Austin – Ranked 4th Nationally
- Houston – Ranked 5th Nationally
- Dallas – Ranked 11th Nationally
- San Antonio** – Ranked 15th Nationally



CPS Blue Wing



UTSA Campus

***** San Antonio was ranked
68th in 2007, 43rd in 2008,
31st in 2009 and 29th in 2010***

Developing Citizen Leaders for a Global Community!

- **Emphasis on Energy, Water, Sustainability and Climate**
- **Implement a Holistic Systems Approach – A Partner of Choice!**
- **Focus on a Few Select Themes Initially**
 - **Energy Efficiency, Renewable Energy Technology and Storage, SMART Secure Distributed Grid, Energy – Water Nexus**



CPS Energy – UTSA Energy Alliance

Ten Year Agreement – Not to Exceed \$ 50 M

Ongoing Efforts

- Sustainability Education – K Through 12
- Carbon Management and Reutilization
- Demand Side Energy Management
- Distributed Secure Photovoltaic Test Bed



Energy Challenges are Complex and Highly Interdependent

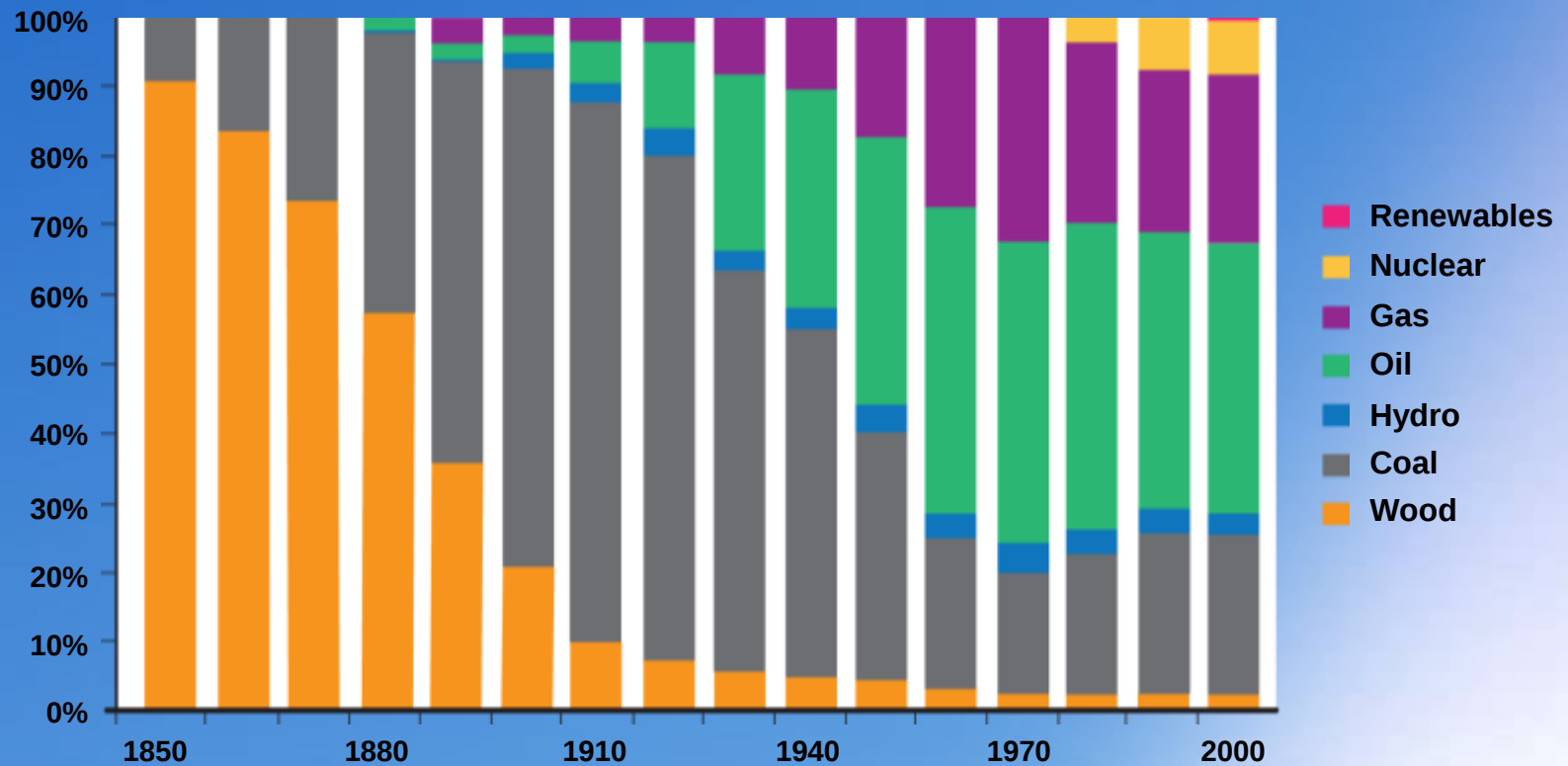
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All Three Imperatives Must Be Addressed!!

Two Major Global Energy Transitions Have Occurred

Major Energy Transitions



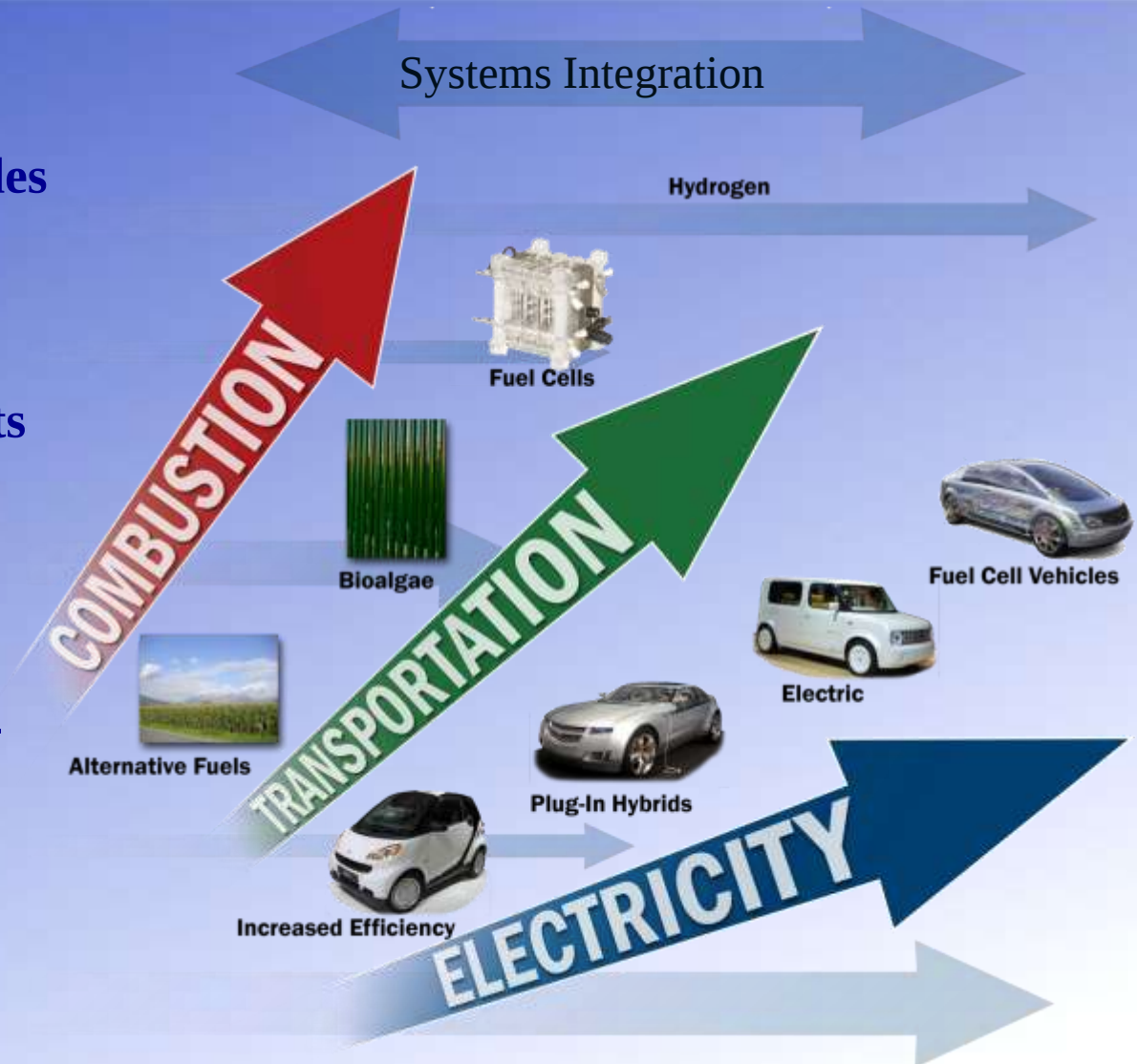
Can We Accelerate the Third?

Low Carbon Energy Systems

“Enabling a Transition Strategy”

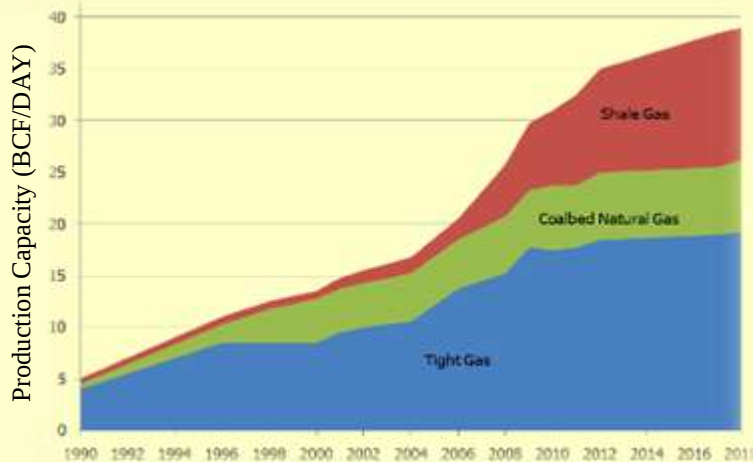
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- Global demand for fossil fuels will persist for decades
- Energy storage is critical
- Incremental improvements will occur by pursuing individual technology solutions
- Strategy must be systems-focused and emphasize improved efficiency

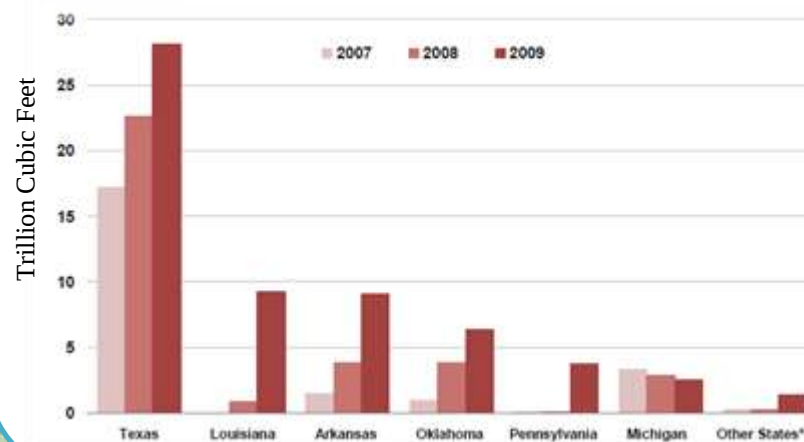


Shale Gas Plays, Lower 48 States

U.S. Unconventional Gas Outlook



Shale Gas Proved Reserves by Year

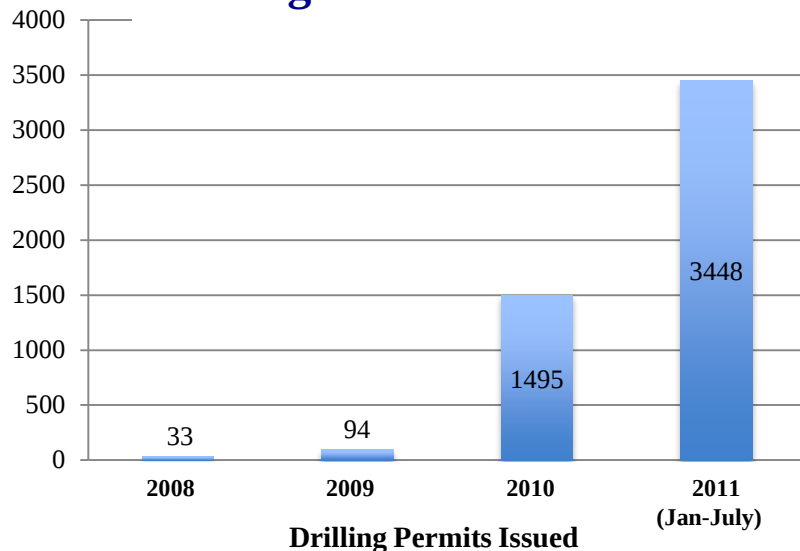


Eagle Ford Shale

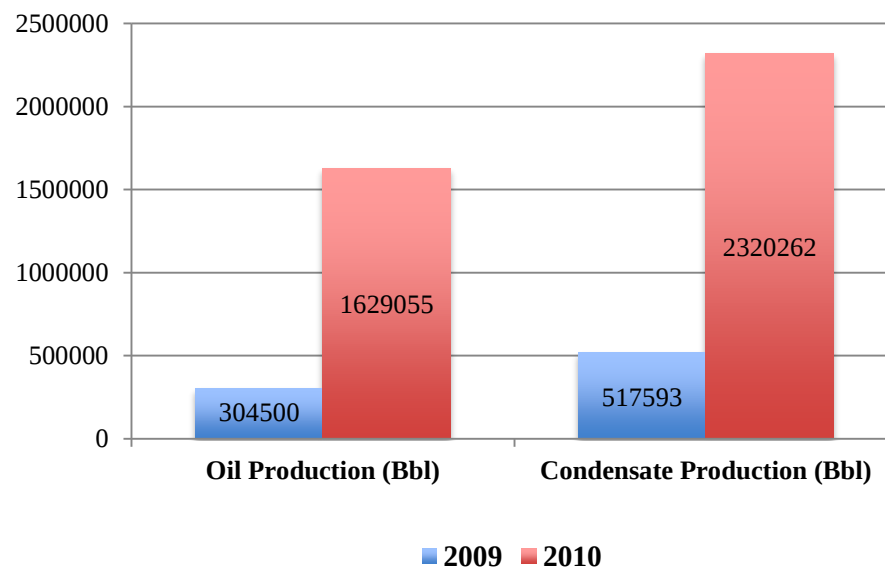
A Glimpse of the Future

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Drilling Permits 2008 - 2011



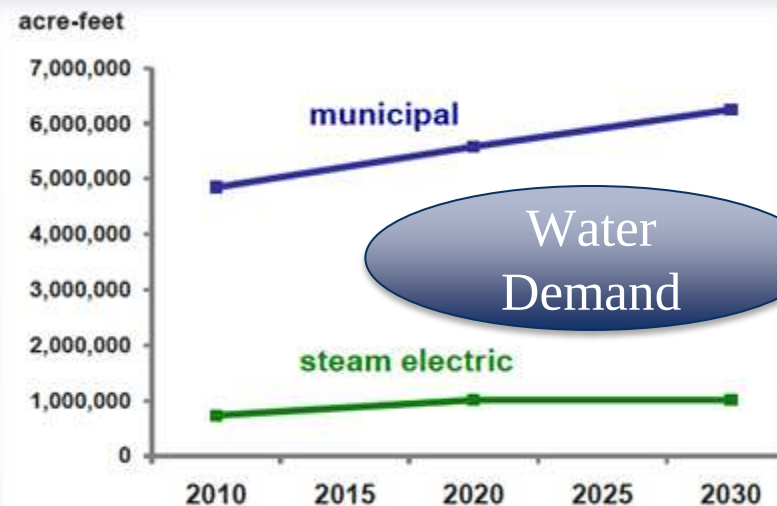
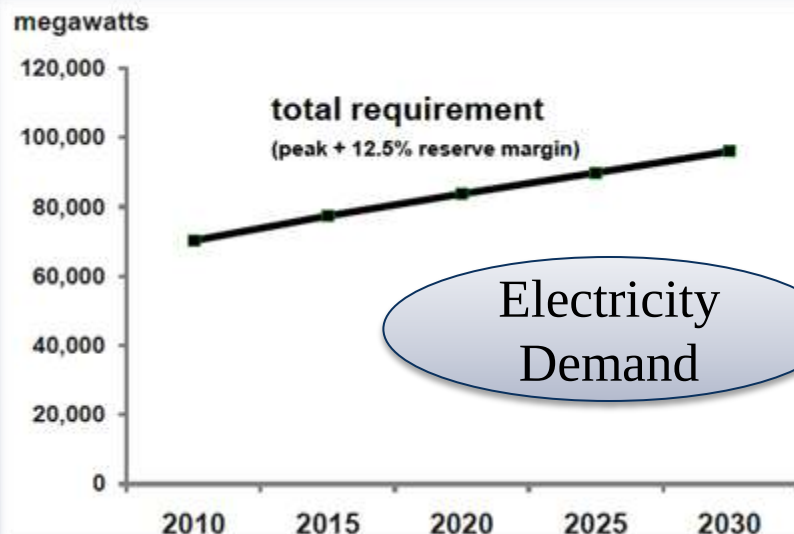
Production Volumes 2009 - 2010



The Nexus in Texas!

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Texas A Diversified 157 Billion Gallon Per Day Water Key Produce ~ 400 Billion kWh Annually For Future Any Other State!



AND Texas Electricity and Water Demand Projected to Increase!

SAWS
Sources

Creating a Sustainable Energy – Water Future!

CPS Energy 2020 Vision Goal

2020 Cumulative Water Reduction Impact

<i>1500 MW of Renewable Energy Generation</i>	<i>64,000 acre-feet (~ 21 Billion Gallons)</i>
<i>100 MW Non-Wind Generation</i>	<i>18,000 acre-feet (~ 6 Billion Gallons)</i>
<i>AMI and Smart Grid Roll-out</i>	<i>Potential to further drive energy efficiency and reduce water consumption</i>

Educating Tomorrow's America --- Today!

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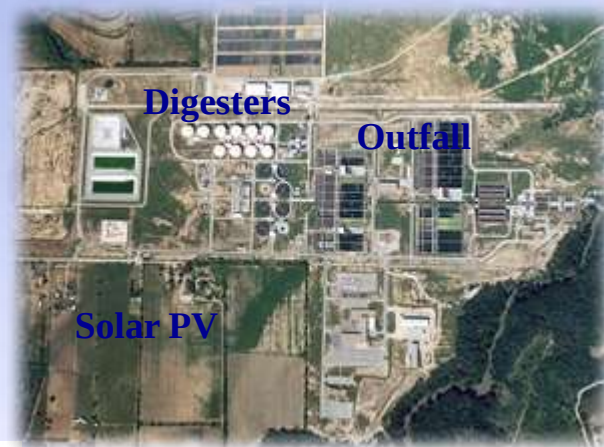
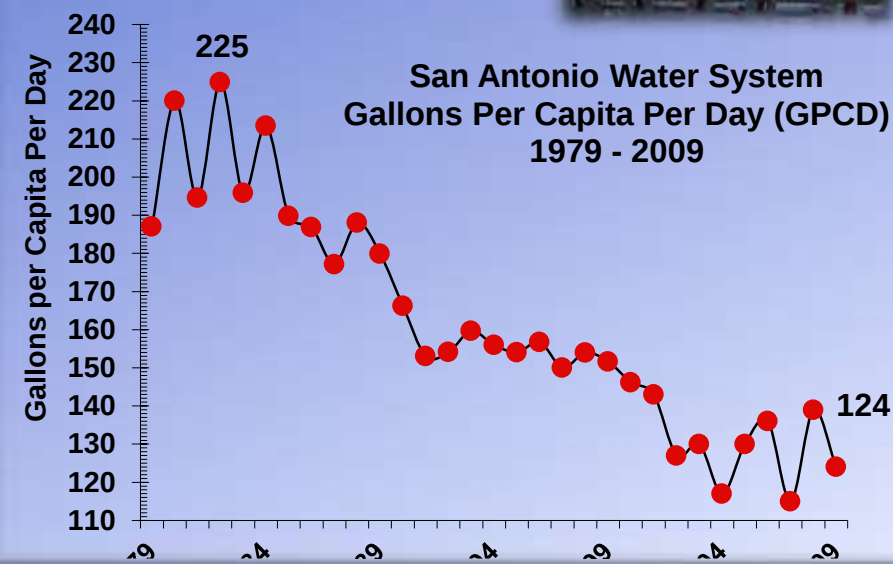
Dos Rios Water Recycling Center

Implementing the “Nexus”

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Implementing the Energy – Water Nexus

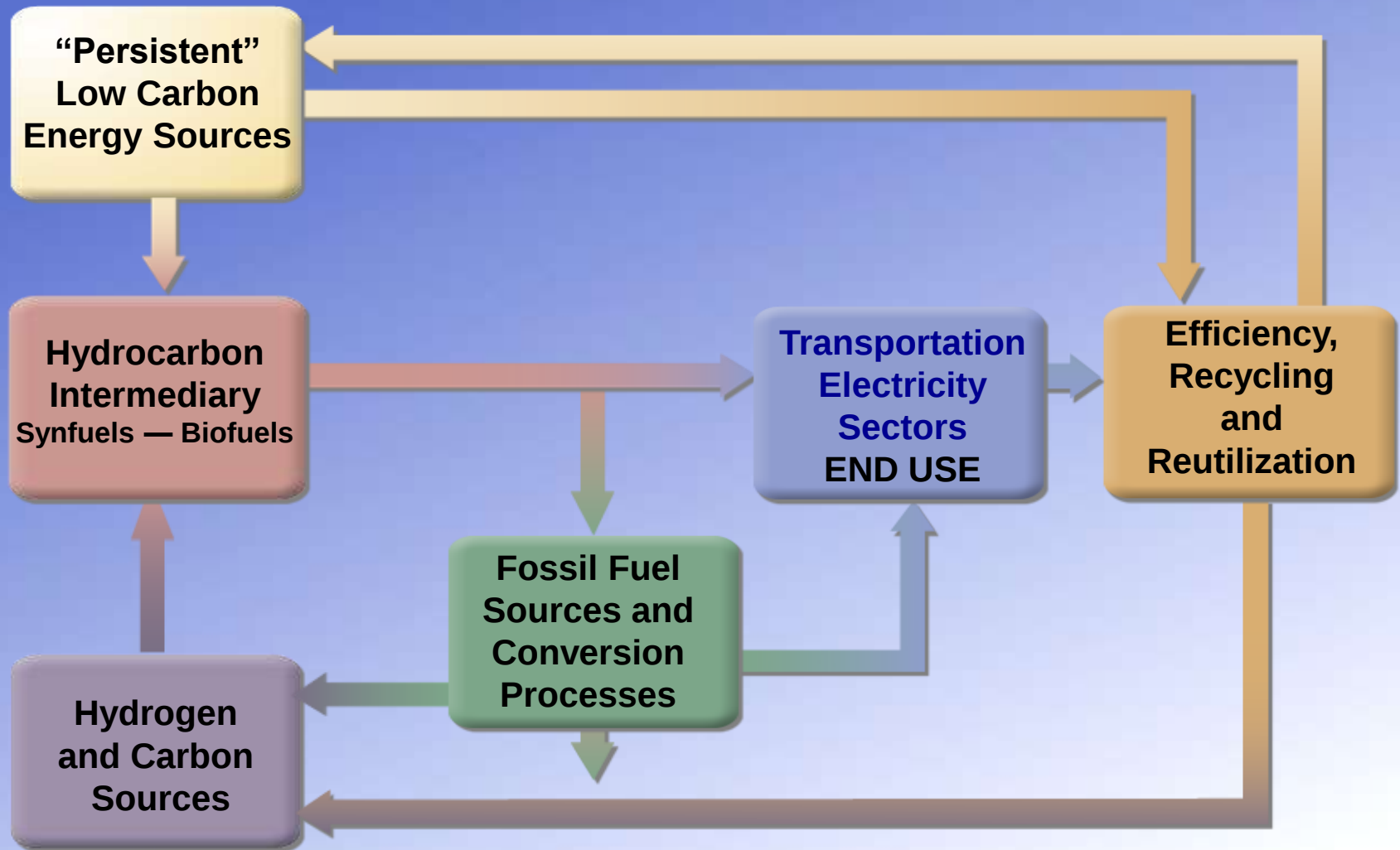
- 140,000 tons/year bio-solids processed
- Produces 1.5 Mcfd process gas – largely methane - SAWS receives a 12% royalty on the sale of gas
- 10 million gallons water recycled daily --- largely for thermoelectric power production
- Installing 20 MW solar PV onsite



Courtesy of San Antonio Water System

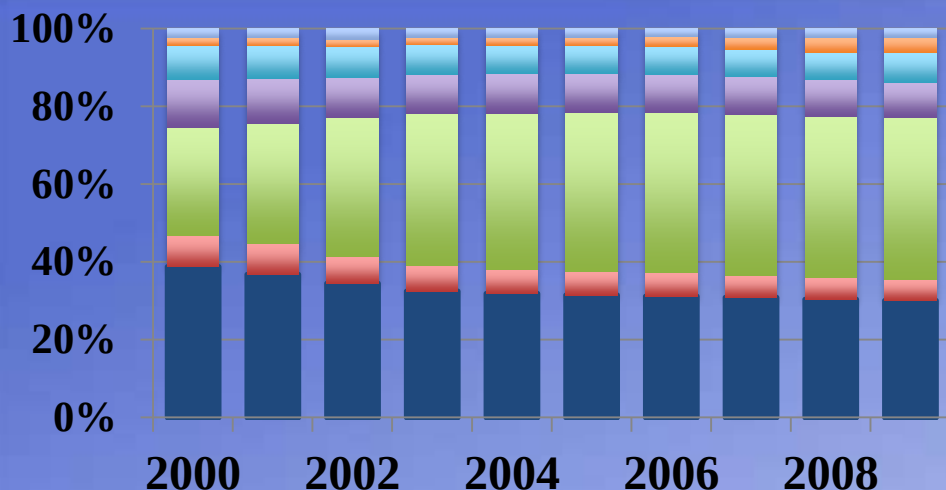
Enabling a Low Carbon Energy System

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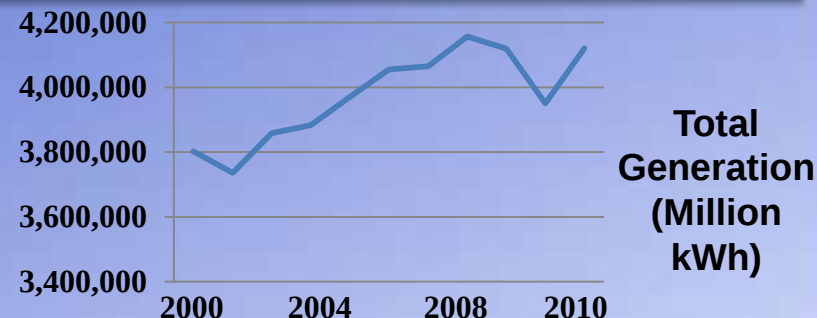


The Challenge is Complex

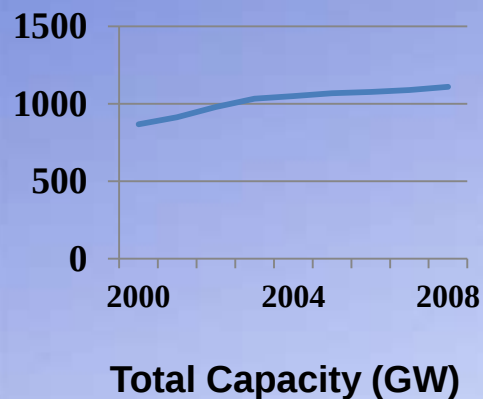
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U.S. Electricity Capacity and Generation 2000 - 2010



Capacity



Generation

