

**Governor's
Office of Energy
Policy**

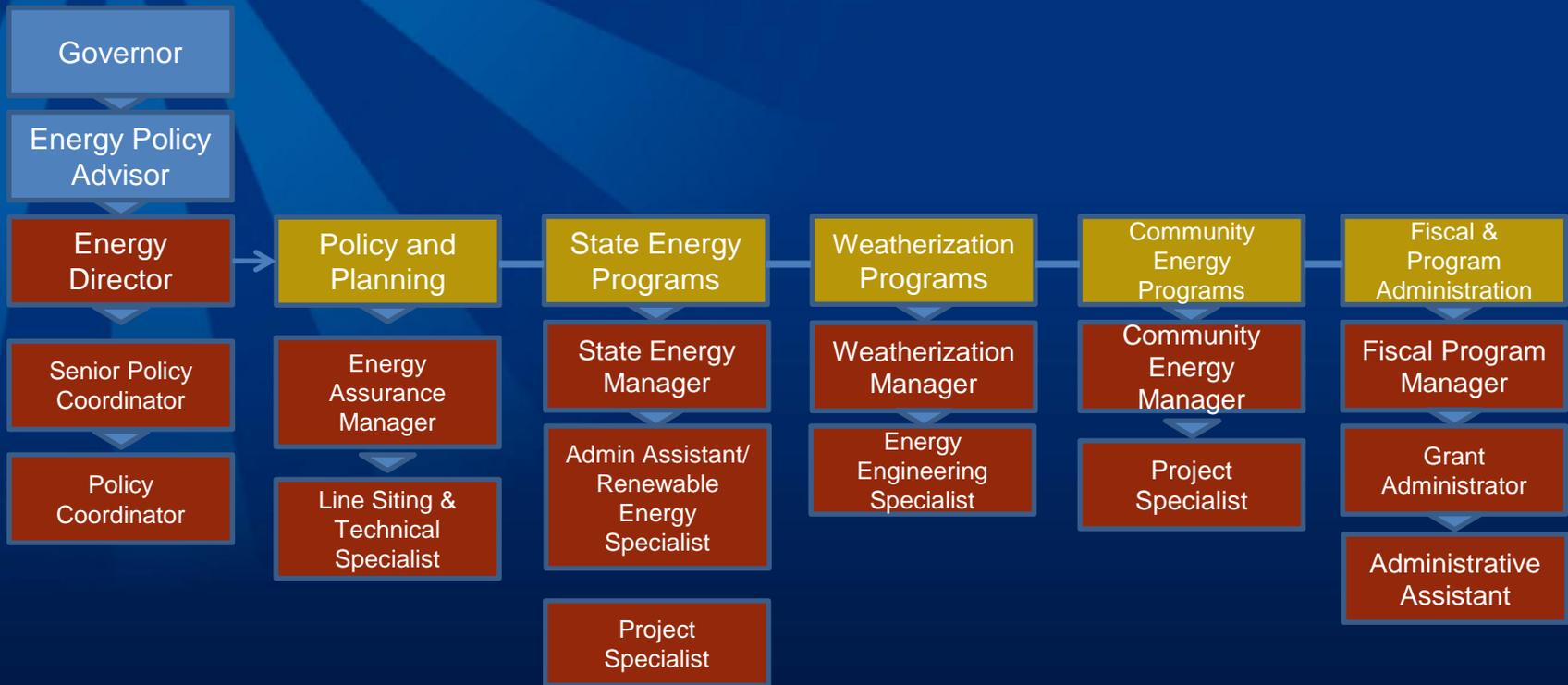




History

- Originally created to address 1973 national gasoline fuel shortage. Housed within the Governor's Office of Economic Planning & Development (1974 – 1985)
- Expanded programs include: State Energy (1975); Weatherization (1976); and Community Energy (1996)
- Established within Arizona Department of Commerce (AKA Arizona Commerce Authority) (1985 to 2011)
- Moved to Governor's Office (2011)

Governor's Office of Energy Policy





Agriculture Energy Applications

- **Governor Brewer allocated Federal funds in 2009 to Agriculture Renewable Energy Projects.**
- **Grant awards issued to 41 farms & ranches for 50 renewable energy projects. 25% Match Required.**
- **\$885,374 awarded towards \$1,404,673 of projects.**
- **Projects replaced Gasoline/Diesel Powered Generators with Solar Photovoltaic Systems.**

Small Photovoltaic Systems

One kW System
5 Gallons/Minute



Small PV Systems – Controls and Pump



Small PV Systems



Storage Tanks



Larger Systems



6.1 kW System



Mission Outpost Ranch (11 kW)

Hereford, AZ



Just Nuts Pecan Farm (36 kW)

Elfrida, AZ



Large Tracking Systems

8.4 kW System



Located in Arizona

Irrigation Sized Systems

267 kW for a 200hp pump



*This is an example, located at Seley Ranch, Borrego Springs, San Diego County, CA.

Wind Energy Projects

New 2.6 kW Turbines



Near Taylor Arizona



Battery Systems





Yeah, But How Much Energy are We Saving?

Savings Calculations

- **System Cost**
 - \$11,000 per kW with New Pump
- **Typical Savings per kW**
 - 750 Gallons Gasoline/Year = \$2,800 Savings/Year
- **Payback Period**
 - $\$11,000 / \$2,800 = 4$ Year Payback



Solar Water Heating Opportunities

- **Provide Hot Water for Processes**
- **Provide Pre-Heating for High Temp or Steam**
- **Offset High Cost of Energy**
- **Payback Periods average 5 to 10 years**



Biofuels Opportunities

- **Crops and Farm Waste to Make Ethanol.**
- **Animal Waste to Fuel Biogas Digesters**
- **Projects are Capital Intense**
- **Pluses: Energy, Odor Control & Water Quality**

WATER ENERGY PARTNERSHIP IN ARIZONA (WEPA)

Connecting Water & Energy



+



=



Water Energy Nexus

EPA estimated that on average, 2 gallons of water are lost to evaporation for each kWh consumed at the point of end use, this number varies State by State, depending on the energy-mix. In Arizona, for example, 7.85 gallons of water are lost to evaporation per kWh consumed.



Water Energy Partnership in Arizona

ACTIVITIES



INVESTIGATION

- Facility Identification
- Benchmark 100 Facilities
- Education/Training



RESOURCE TEAM

- Needs Assessment
- Funding Options
- Education/Training



OUTREACH

- Project Upgrades
- Education/Training

Coordination/Collaboration



INVESTIGATION

- In partnership with water and energy professional developed survey to distribute to 100 wastewater facilities
- Distribute survey to operators. Coordinate with utility partners to release 12 months utility bills
- Input data into EPA's ENERGY STAR Portfolio Manager

RESOURCE TEAMS

Develop resource teams to assist facilities

State: Environmental Quality, Transportation, Land Dept.
Water Infrastructure Finance Authority, Parks,
Water Resources, Transportation, Agriculture

Federal: USDA, EPA, Bureau of Reclamation, NPS, USFS

Utility: Arizona Public Service, Unisource, Salt River Project,
Sulphur Springs, AZ Electric Power Cooperative,
Mohave Electric Co-op, Navoapache

Private: Honeywell, Lincus Energy, AMERSCO, TRANE,
Chelsea Group, Border Environment Cooperation Commission
(BECC)

Universities: U of A, ASU and NAU

Professional Organizations: AZ Water Works Assoc., Rural Water
Assoc., Assoc of Energy Engineers





OUTREACH

Training: Develop and deliver water and energy training to operators, owners, elected officials and industry professional.

Outreach: Develop partnerships between water and energy professionals.



Why Coordination and Collaboration?

Energy issues are here to stay and will only get more serious—no quick fixes!

- Individual projects and technologies are fine, but something is needed to pull it all together (**a process**)
- Systematic process will ensure **continuing focus on energy efficiency**
 - Reduce operating costs
 - Financial savings can be reinvested back into system
 - Less pressure on resources
 - Less strain on current energy grid

Load Up!



Lisa Henderson

Governor's Office of Energy Policy
Community Energy Program Manager

602.771.1134

LHenderson@az.gov