



An Energy Efficiency Workshop & Exposition

---

Palm Springs, California

## *Energy Conservation*

*What else is there?*

Martin Nelson, CEM

Resource Efficiency Manager, Tetra Tech

Naval Base Coronado



# *It's not Just Energy*

## *What Else Is There?*

---

- Environmental Issues
  - Air Emission
  - Natural Resources
  - Sustainability





# *It's not Just Energy*

## *What Else Is There?*

---

- Collateral Savings
  - New Infrastructure and Transmission cost
- Maintenance and Reliability
  - Deferred Capital and Labor cost
- Case Studies
  - 750 KW Photovoltaic System
  - Horizontal Axis Washers
  - LED Lighting systems



## *The Basics*

---

Energy conservation projects that reduce electrical consumption avoid at least:

- 103 pounds of carbon dioxide per megawatt
- 0.21 pounds of sulfur monoxide per megawatt
- 0.15 pounds of nitrous oxide per megawatt





## *The Basics*

---

Avoided resources needed for new generation and distribution infrastructure.

- New Gas and Electric transmission and distribution systems
  - Cost of Labor
  - Cost of raw materials
  - Cost of land and environmental studies





## *The Basics*

---

- Maintenance and Reliability
  - Deferred Capital and Labor cost
  - New Technologies have longer expected life
- Unplanned outages
  - **Very Expensive !**



## *750 KW PV System Naval Base Coronado*

---

- Green house gases associated with power generation
- Cost avoidance for **on peak** electricity
- Distributed generation for California unique energy situation





## *Its Not Just - Energy Savings*

---

- Community stewardship
- PV system will generate approximated 2.5% of base peak electrical demand
- Showcase project for the Navy
- 450 secured covered parking stalls for deployed sailors





# High-Efficiency Front-Loading Washing Machines

---

Compared to the existing 45 Gal. washers, savings will result from:

## Electricity Savings

- Reduced electricity to operate washer motor and controls – 25 % savings.
- Reduced electricity to operate existing electric dryers – 10 % savings due to less moisture content in clothes leaving washer.
- Reduced electricity due to less (electrically heated) hot water required – 40 % savings.

## Natural Gas Savings

- Reduce Natural gas used for heating hot water - 40 % savings.
- Reduced natural gas to operate existing gas clothes dryers – 10 % savings.





# *Its Not Just - Energy Savings*

---

## Water Savings

- Less water required per wash – 40 % savings
  - And all the energy needed for delivery

## Sewer Savings

- Equal to water savings – 40 % savings
  - And all the energy needed for processing

## Environmental Permitting Savings

- Allows water treatment plant to meet daily discharge limits
- Defers expensive expansion of water treatment plant





## *LED Aviation Lights*

---

- ❑ Annual Kwh saved  
488
- ❑ Annual dollars  
saved @\$0.10 Kwh=  
\$48.80
- ❑ Simple ROI = 1.43  
years
- ❑ Product cost \$70

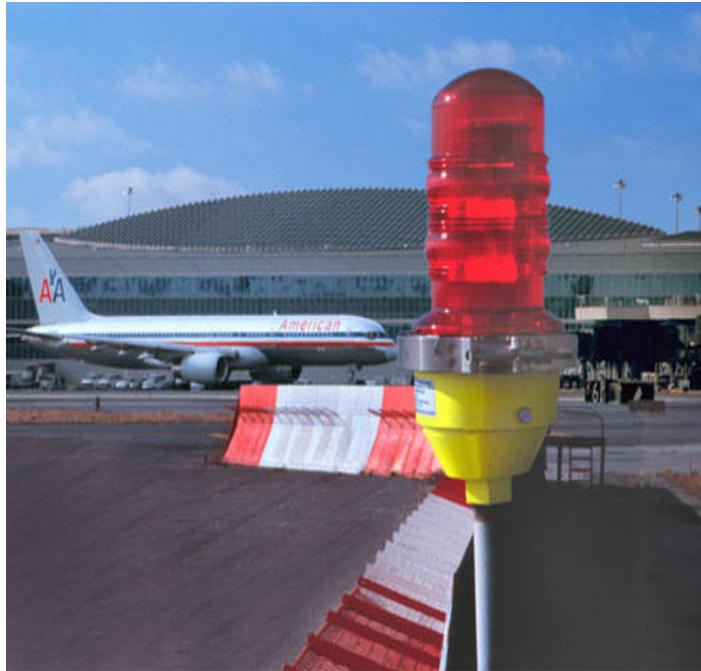




## *2002 Its Not Just - Energy Savings*

---

- HI - Lift cost  
\$100/day
- Labor for Hi-lift  
\$65/hour
- Labor for Electrician  
\$75/hour
- Twice / Yr. Avoided  
Maintenance = \$480





## *Additional Resources & Facts*

---

### **Websites:**

- <http://www.awea.org/pubs/factsheets/EmissionKB.PDF>
- <http://www.epa.gov/globalwarming/actions/cleanenergy/sol/>
- <http://www.eren.doe.gov/geothermal/>
- <http://yosemite1.epa.gov/oar/rew.nsf/greenpower/index.html>



## *What Else Is There ?*

---

- Environmental Benefits
- New Generation Infrastructure
- Maintenance, Reliability & Sustainability



## *Conclusion*

---

- Energy generation and consumption is one of the greatest impacts that man has on the environment.
- Aggressive energy management is one of the most successful activities to minimize those impacts.