SUNRISE FROM THE WEST

THE GROWTH OF RENEWABLE ENERGY IN CALIFORNIA

David Hochschild
California Energy Commission
The Challenge is Big...

The 2020 Goal:
33% Renewables
&
12 GW of Clean Distributed Generation
&
1 million Electric Vehicles
...But Big Challenges Are What We Do

1972: Rand Corporation report: CA energy demand growing 8% per year, predicts 40 new nuclear power plants may be needed

1974: Jerry Brown elected Governor. California Energy Commission created to help CA lead on energy efficiency and renewables

1975: CA initiates first efficiency standards for buildings and appliances
California Advancing Energy Efficiency

The graph shows the trend of energy consumption per person indexed to 1975 for California and the rest of the United States. The graph indicates a significant increase in energy consumption over the years, with California showing a generally higher consumption than the rest of the United States. The graph also highlights savings in various sectors: industrial, commercial, and residential.
2009: The Energy Commission’s TV efficiency standards take effect, saving Californians $1 billion/year...

2012: The plug-in charger efficiency standard begins, saving Californians $300 M/year
Governor Brown Increases CA RPS. “33% is a floor not a ceiling”
The World’s Largest Solar Thermal Power Plant (Tower)

Ivanpah Solar Thermal Project
393 MW
San Bernardino County, CA
The World’s Largest Thin Film Solar PV Project...

Desert Sunlight Solar Project
550 MW
Riverside County, CA
The World’s Largest Wind Project

Alta Wind Energy Center
1550 MW
Kern County, CA
The World’s Largest Silicon PV Project

Solar Star Project
579 MW
Kern County, CA
The World’s Largest Geothermal Power Plant

Geysers Geothermal Power Plant
955 MW
Lake County, CA
The World’s Largest Solar Thermal Power Plant (Trough)

Solar Energy Generating System (SEGS)
310 MW
San Bernadino County, CA
The World’s Largest Iron-Chromium Flow Battery

EnerVault Iron-Chromium Technology
1 MW-hr capacity at 250 kW (4 hour duration)
Turlock, CA
Largest Manufacturing Plant in CA is Now Electric Vehicles

Over 6000 workers now at Tesla

MORE THAN 100,000 EV’s AND PLUG-IN VEHICLES IN CALIFORNIA TODAY
CA Leads in New Solar Home Construction

Over 13,000 New Solar Homes Installed in CA. 12,000 more under way.

Zero Energy Community
Rocklin, CA

ZERO ENERGY HOMES TO BE STANDARD IN 2020
“Default risks are 32% lower in energy efficient homes”


3 YEAR JOB GROWTH RATES

Coal Mining: -3%
US Iron and Steel Mill Industry: +4%
US Auto Manufacturing: +21%
US Solar Industry: +53%

California Residential Electric Bills Are 20% Below the National Average

Source: U.S. Energy Information Administration (2011)
Case Study in Reducing Impacts: Vasco Wind Energy Center Repowering

432 small turbines taken down and replaced with 34 new turbines

RESULTS: Energy production tripled & avian mortality cut by 70%

Vasco Wind Energy Center, 78MW
Contra Costa County
Annual U.S. Avian Mortality Caused by Humans: 3 Billion Birds

http://www.stateofthebirds.org/
Federal Subsidies Have Favored Fossil Fuels

Cumulative Historical Federal Subsidies
2010$, billions

- $185.38 (1947-1999)
- $446.96 (1918-2009)
- $32.34 (1980-2009)
- $5.93 (1994-2009)

Source: “What Would Jefferson Do?”, DBL Investors
Getting Smarter About Energy Savings

![Energy Demand Chart]

- **Clothes Dryer**: Consumes energy at 1:01 pm.
- **Pool Pump**: Operates at 3:29 pm.
- **Base Load**: Continuously running, costs $578 per year.
- **Cooking**: Peaks at 9:12 am.
WHAT IS THE ROLE OF THE UTILITIES?

They must be agents of change rather than victims of change
Drawing Lessons from Successful Campaigns: Smoking in the US
% of Americans Who Smoke

1965: Health warnings required on packaging
1983: Cigarette tax doubles
1992: U.S. Bans Sale to Minors
1988: U.S. Bans Smoking on Airplanes
1998: CA Bans Smoking in Bars
2013: Smoking Rate Falls to 18%
2014: CVS Stops cigarette sales at 7,600 retail pharmacies

Source: Centers for Disease Control and Prevention (CDC), 2014
http://www.cdc.gov/tobacco/data_statistics/tables/trends/cig_smoking/index.htm
Thank you