



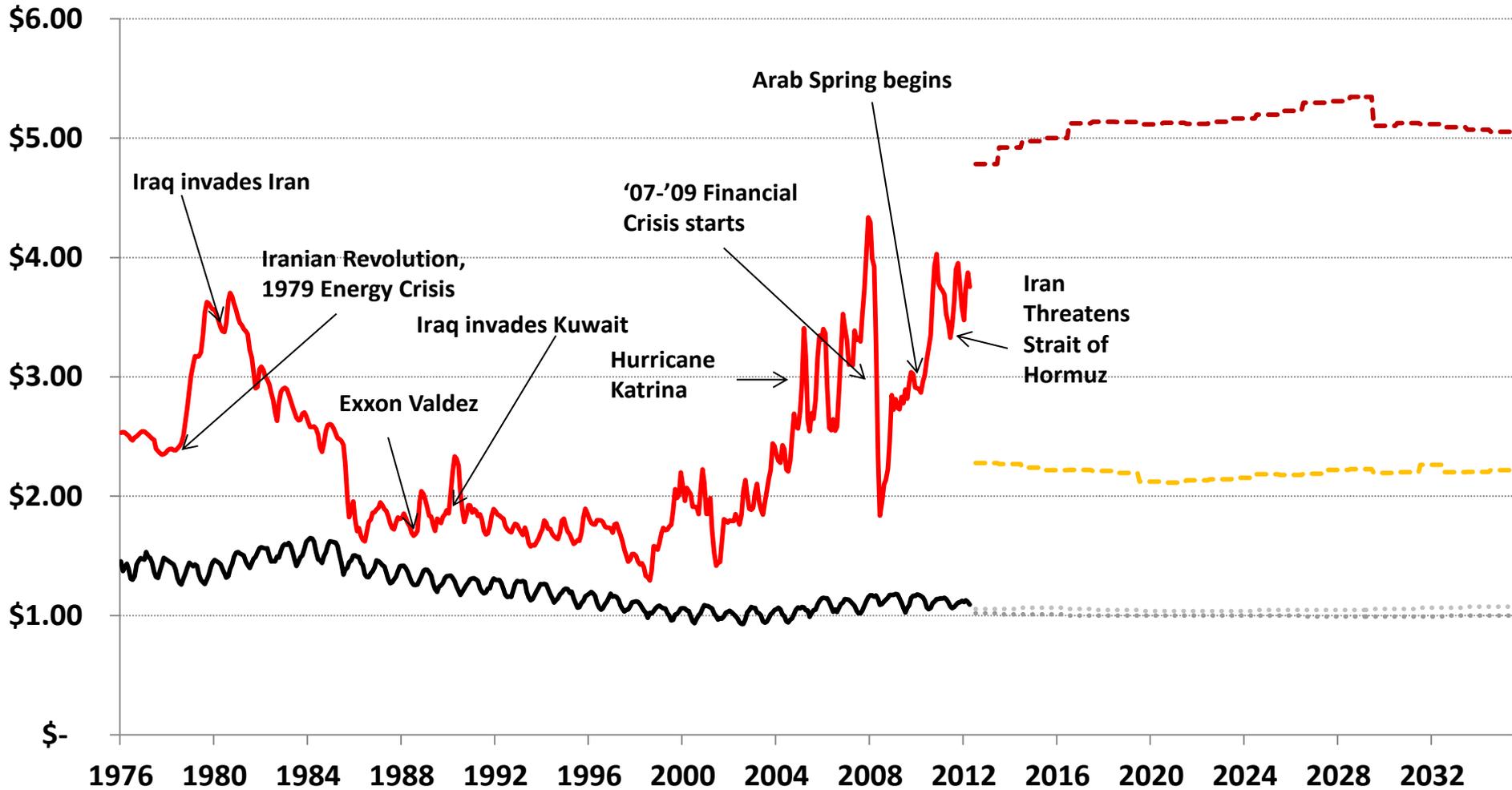
The Smart Grid: Electric Vehicles on the Energy Highway

Max Baumhefner
Attorney, Transportation Program
Natural Resources Defense Council

Unplugged: The Renewable Energy Speaker Series
June 19, 2013



The Promise of Dollar-a-Gallon Gasoline



- Gasoline
- Electricity
- Gasoline Forecast (Low)
- Gasoline Forecast (High)
- Electricity Forecast (Low)
- Electricity Forecast (High)

Equivalent price for a 27 mile-per-gallon conventional vehicle and a plug-in electric vehicle with 0.34 kilowatt-hour-per-mile efficiency. Historical Prices in November 2012 \$/gallon equivalent. Forecasts in 2010 \$/gallon equivalent. *Source: Energy Information Administration, Short-Term Energy Outlook, November 2012.*



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eGallon: Compare the costs of driving with electricity

What is eGallon?
It is the cost of fueling a vehicle with electricity compared to a similar vehicle that runs on gasoline.

Did you know?
On average, it costs about 3 times less to drive an electric vehicle.

Find out how much it costs to fuel an electric vehicle in your state

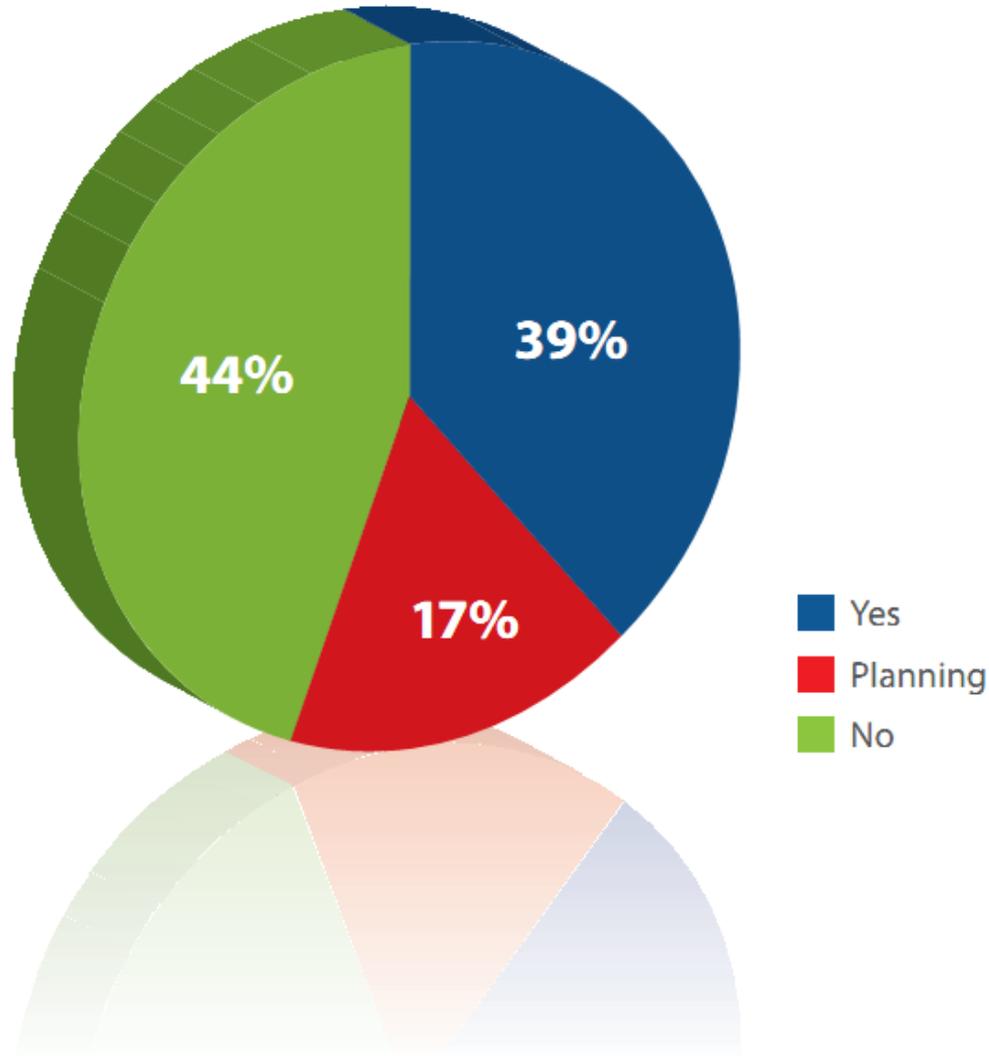
California ▾

regular gasoline	3.98
electric eGallon	1.51

Data and Methodology

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Plugging Vehicles Into Clean Energy



Five Potential Pathways

- 1) On-site energy efficiency
- 2) On-site renewables
- 3) Off-site renewables
- 4) Renewable Energy Certificates
- 5) Integrating variable renewable resources

On-Site Energy Efficiency Upgrades



On-Site Renewables

Ford **SUNPOWER**

Drive Green for Life.

Produces an average of more than 3,000 kWh of electricity per year

Energy generated during the day can balance power drawn at night when charging vehicle

Enough for 1,000 miles of driving per month

Off-Site Renewables



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SolarShares frequently asked questions

Why SolarSharesSM?

Owning your own solar electricity system may be too costly or impractical for your situation. And for renters and many condo owners, it's not even an option. But with SolarShares, everyone can get electricity from the sun without the responsibilities or costs of ownership. Members can participate at levels beginning at \$10.75 per month for a 0.5kW system (typically, those with smaller monthly bills). After your monthly fee, the amount of power generated by your



Locally-grown solar power

Buy your electricity fresh off the farm.

[Video](#)



Energy savings begin here

See where your energy dollars may be going.

[Learn more](#)

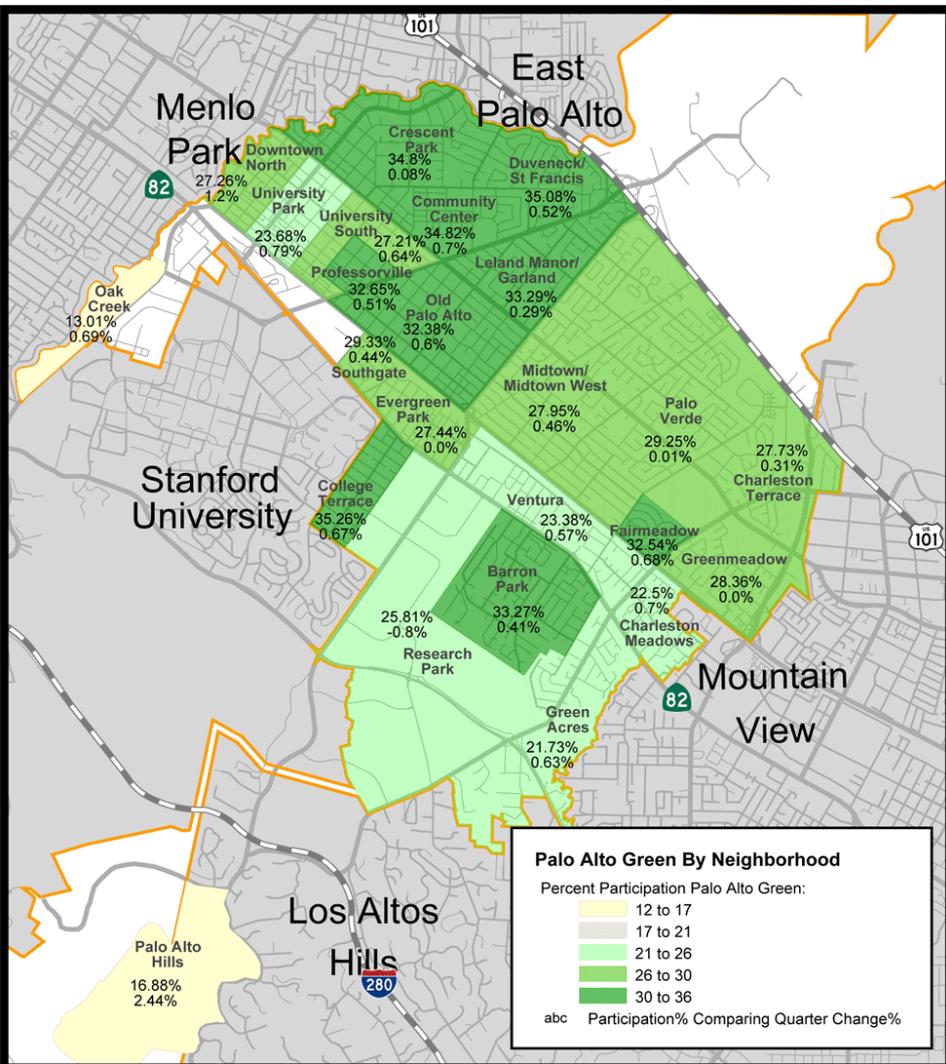


Source: Sacramento Municipal Utility District

Renewable Energy Certificates



Green Utility Tariffs



Floor-mats or Wind Energy?



Questions? [Contact Us](#)

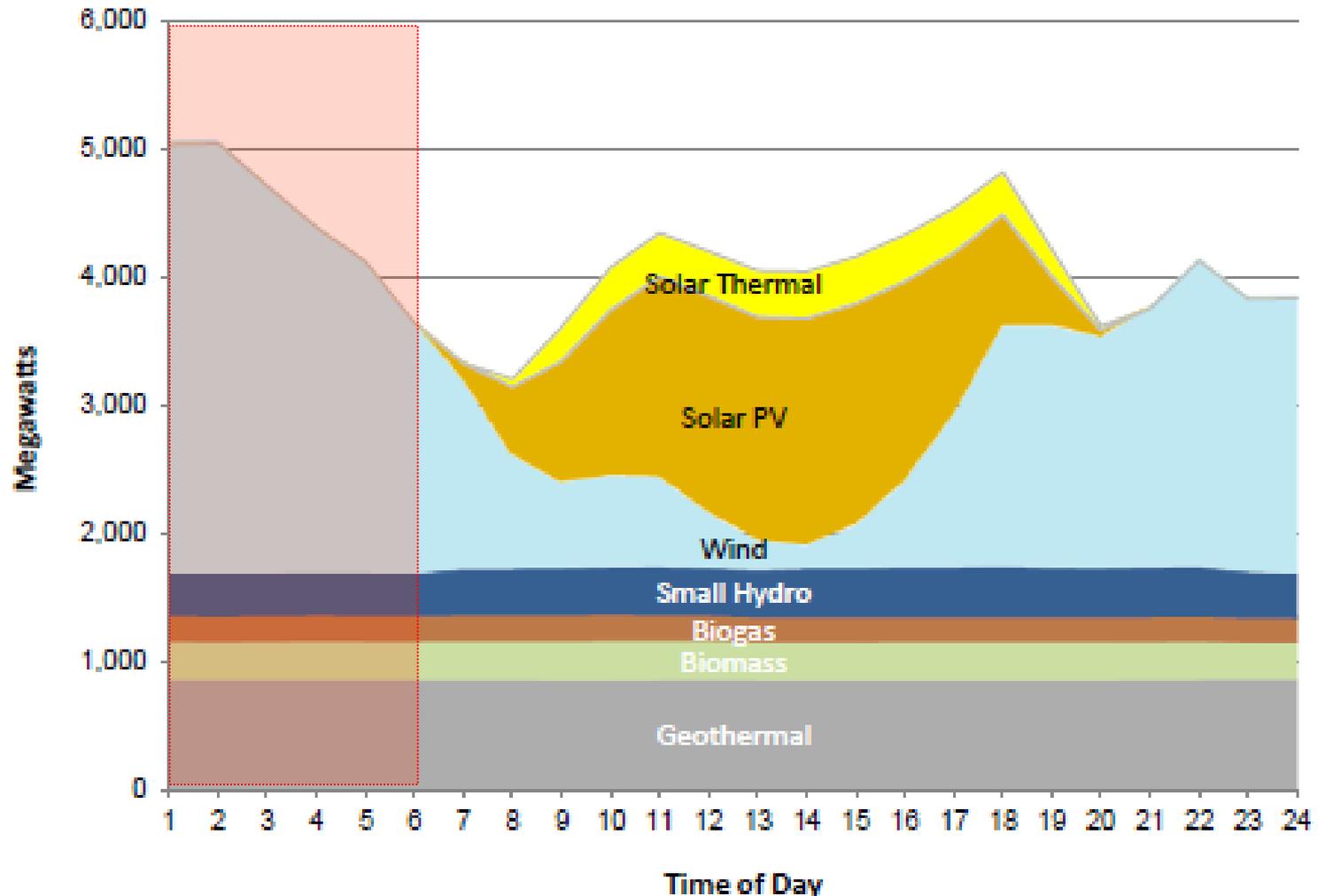
WELCOME, ELECTRONAUTS.

You Are Just One Step Away from Supporting Emissions-Free Energy with Your BMW ActiveE...



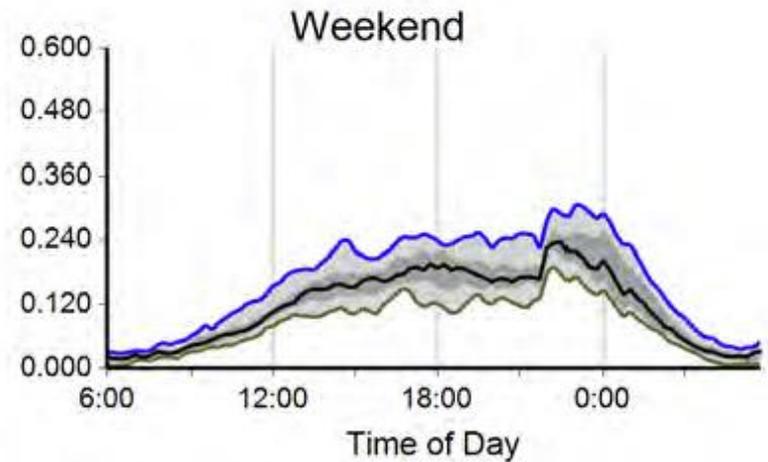
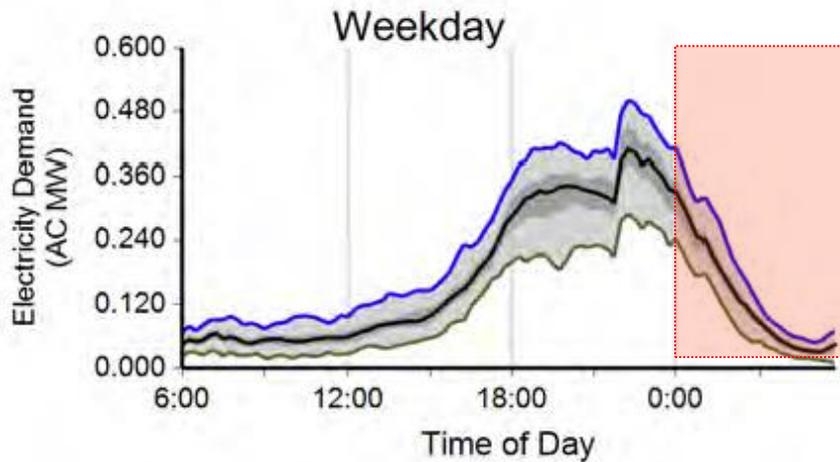
Source: BMW

Integrating Variable Renewable Resources

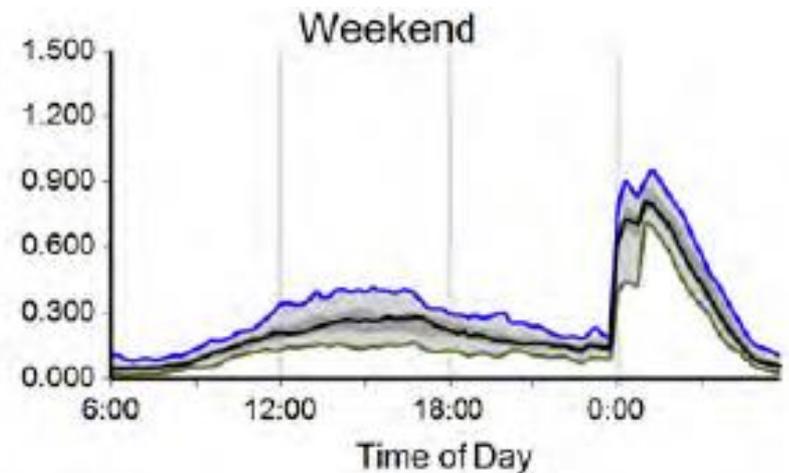
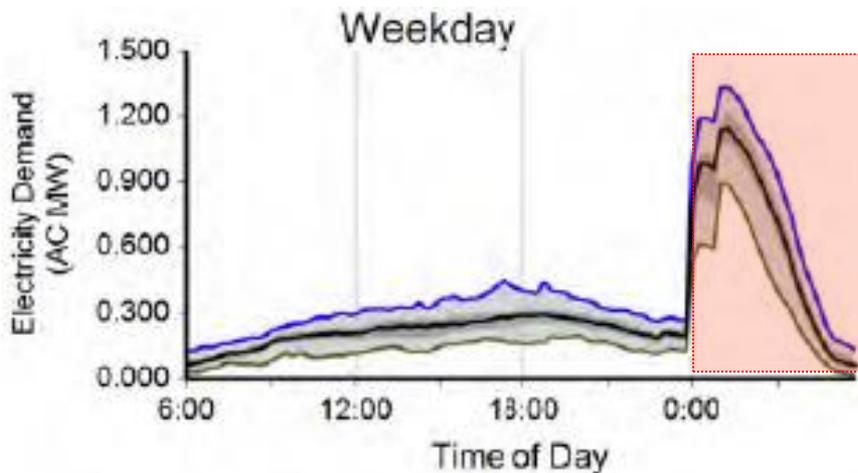


Integrating Variable Renewable Resources

Oregon



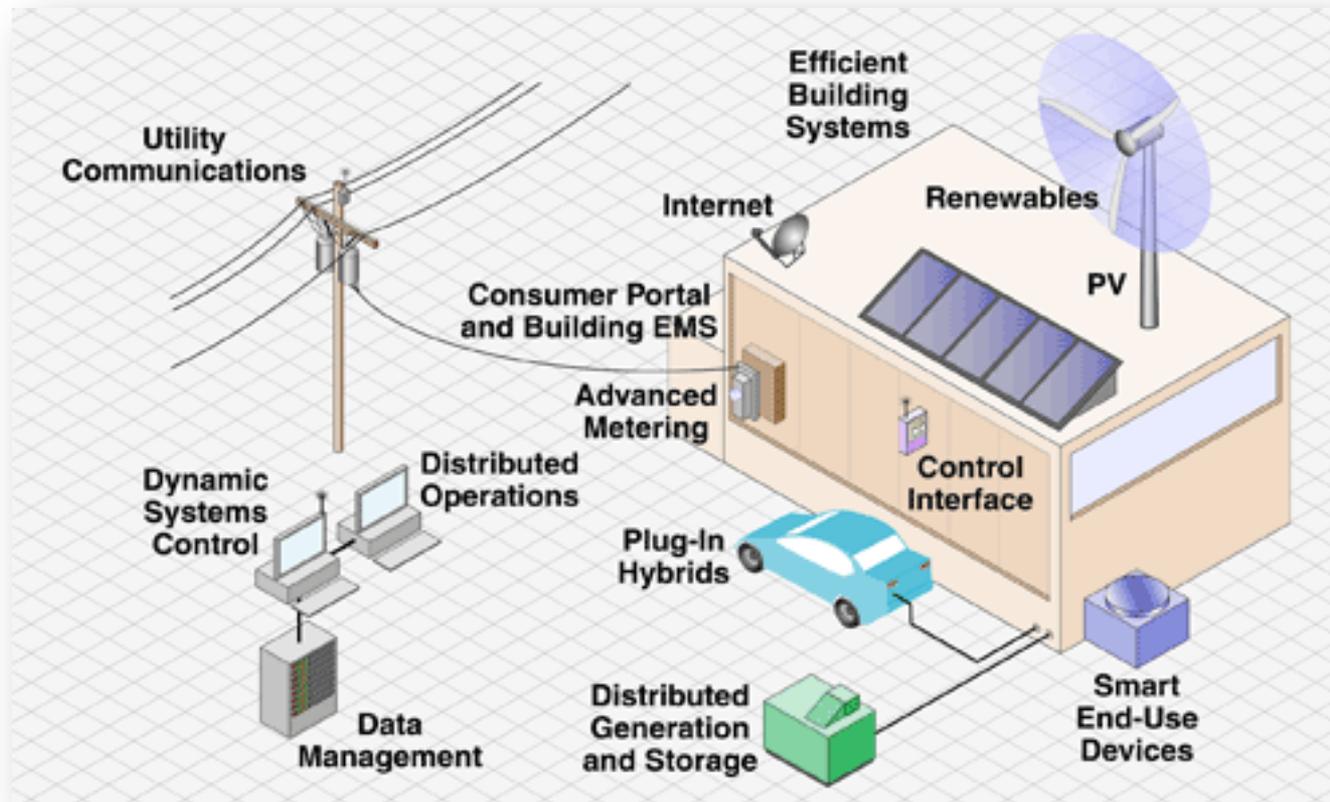
San Diego



The Future is Now



Conclusions



Thank You

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