

NEW MEXICO



PUBLIC REGULATION COMMISSION



New Mexico's Path to a Sustainable Energy Future



Commissioner

Jason Marks

Solar Fiesta 2010



Outline

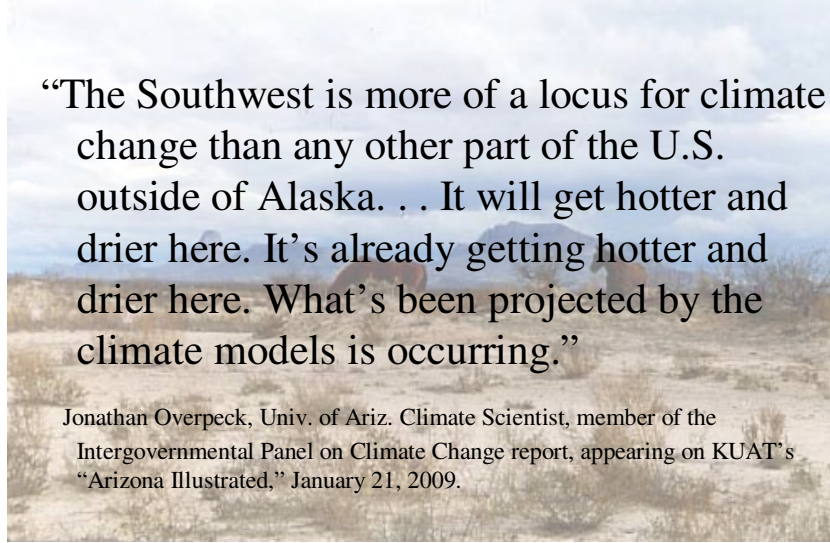
- **Intro/Challenges**
- **Technologies**
- **Policy Tools**



our challenging environment – climate change

“The Southwest is more of a locus for climate change than any other part of the U.S. outside of Alaska. . . It will get hotter and drier here. It’s already getting hotter and drier here. What’s been projected by the climate models is occurring.”

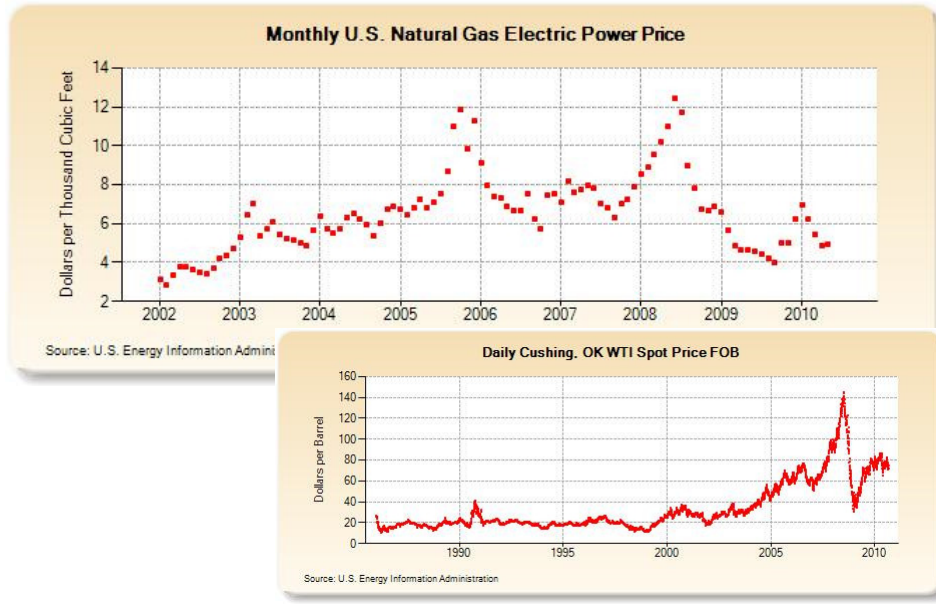
Jonathan Overpeck, Univ. of Ariz. Climate Scientist, member of the Intergovernmental Panel on Climate Change report, appearing on KUAT’s “Arizona Illustrated,” January 21, 2009.



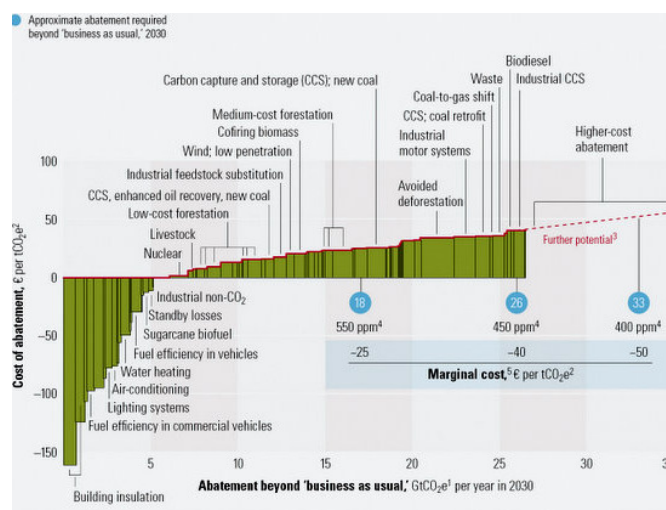
**San Rafael, California – pop 55,000
1.25m increase in sea level**



our challenging environment – fuel price volatility



Challenging and Evolving Environment: Getting Serious about Climate Change



EPRI Prism Analysis

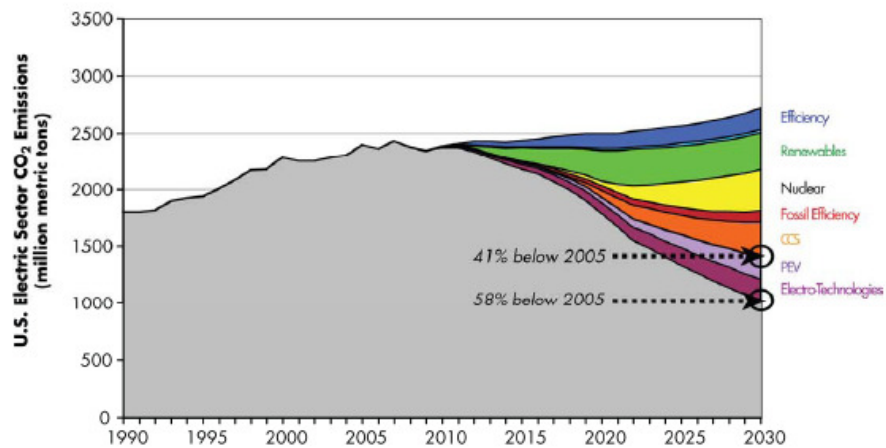


Figure 2-1
2009 Prism

Can we afford Nuclear and CCS (and solar)

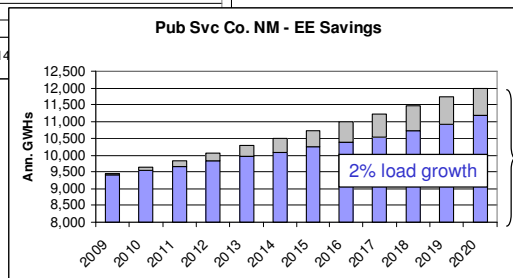
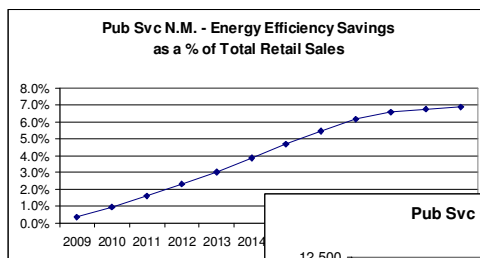
- Moody's: "New nuclear generation is a 'bet the farm' endeavor"
- Nuclear costs ~\$150/mwh (Moody's, S&P); \$84/Mwh (MIT 2009)
- Coal w/ CCS also > \$120/mwh (CRS, Lazard)

Energy Efficiency

- Energy Efficiency is lowest-cost source of energy
- Utility-based energy efficiency programs provide rebates/advice for lighting, appliances, weatherization, commercial energy efficiency

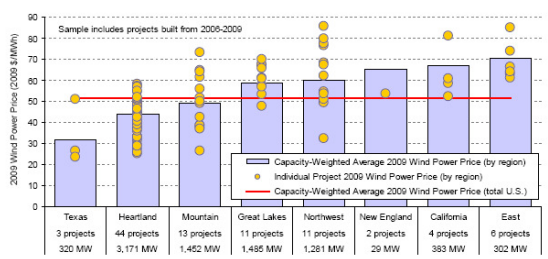
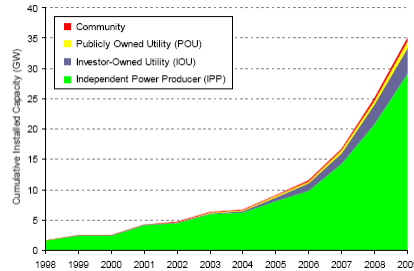


new mexico confronts supply challenges: getting serious about energy efficiency



Wind Energy – Prime Mover in R.E

- Approx 35,000 MW installed capacity
- 10,000 MW added in 2009
- Utility ownership has begun
- Cost \$23 - \$60/mwh after PTC
- PTC = \$18/mwh
- Prices increasing due to materials, demand, Exchange Rate



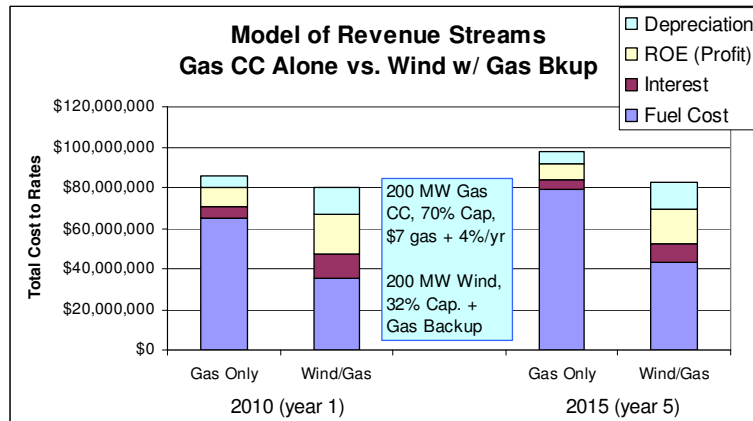
Source: Berkeley Lab
Annual Report on U.S. Wind Power Installation, Cost, and Performance Trends: 2009. Wisner, R., and M. Bolinger, LBNL August 2010

Wind projects in NM or serving NM

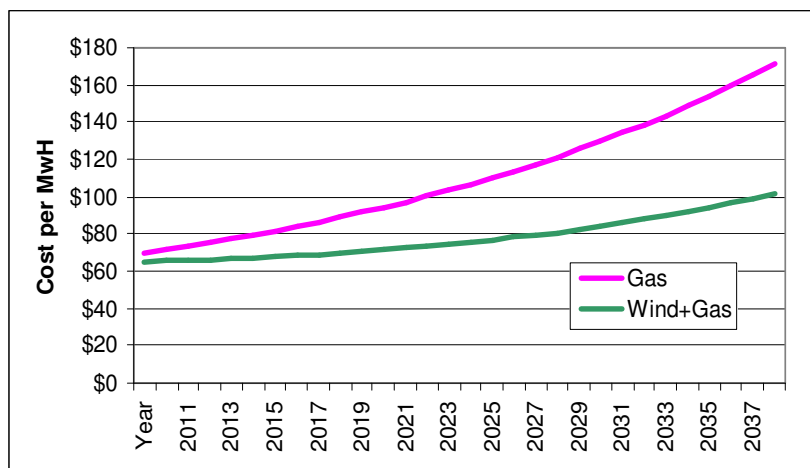
Project	Utility*	Date Online	MW
Clovis	Xcel	1999	0.66
N.M. Wind Energy Ct	PNM	2003	204
White Deer - TX	Xcel	2004	80
Caprock	Xcel	2004	60
Caprock II	Xcel	2005	20
San Jon	Xcel	2005	120
Wildorado - TX	Xcel	2007	160
Aragonne Mesa	APS	2007	90
High Lonesome	APS	2009	100

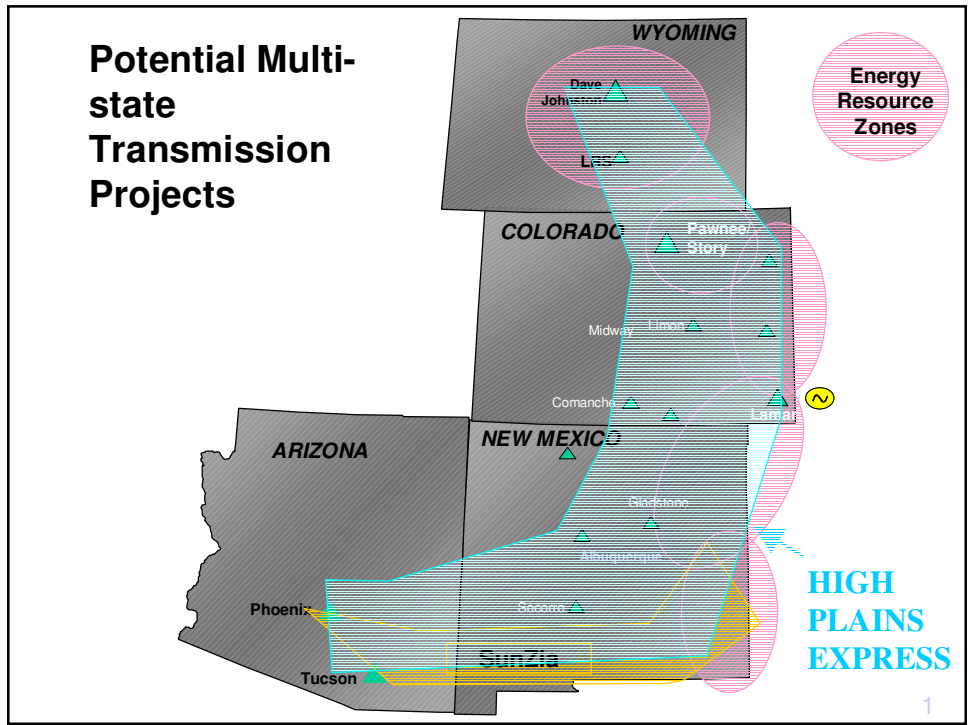
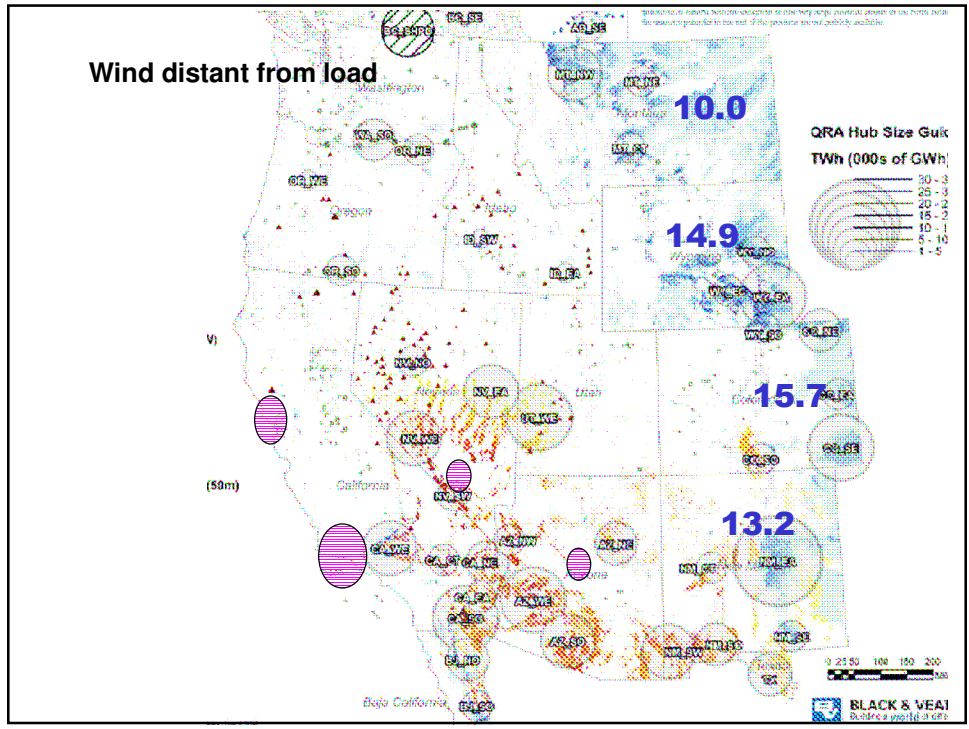
*All projects are via PPAs.

Wind with Gas Backup: Good for Utilities, Good for Ratepayers.



Wind with Gas Backup – Capacity + Reduced exposure to Gas Pricing Pressure





Solar Technologies



Photovoltaic (PV) Panels:

- 2 kw home systems common (~\$16,000 installed home system = 24¢/kwh*)
- Commercial (10 kw – 1 MW+)
- Utility Scale 5 MW – 20 MW 11¢/kwh*

*after 30% fed'l tax credit, including financing cost

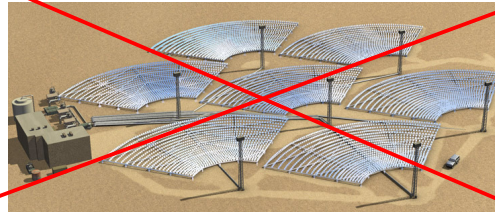
Concentrated Solar Power (CSP)

- 10-15¢/kwh* for 100MW+ projects
- **Thermal Storage/Backup Possible**
- Kramer Junction (1980s) 350 MW, Nevada Solar One (2007) 64 MW, Spain



Utility-Scale Solar Projects in N.M.

- El Paso Electric/eSolar 92 MW CSP mini-tower



- TriState/FirstSolar 30 MW PV in Colfax County
- Kit Carson 1 MW DG/ 1MW CPV
- SPS/Sun Edison 5 x 10 MW PV (pending PRC approval)
- PNM/FirstSolar 22 MW Dist. PV
- EPE/NRG 20 MW PV
- TriState/DOE Solar preheat demo at Escalante

Biomass and geothermal opportunities



- Dairy & Feedlot Waste
- Wood Waste
- Landfill Gas

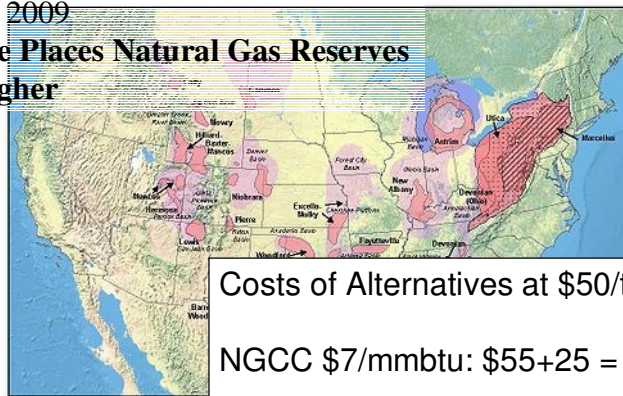
Binary geothermal plant, allows development of lower temp resources



The New York Times

June 18, 2009

Estimate Places Natural Gas Reserves
35% Higher



Costs of Alternatives at \$50/ton CO₂:

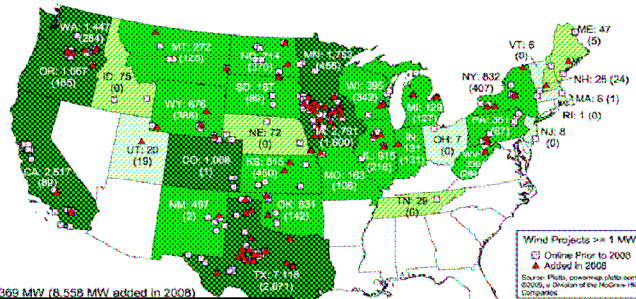
NGCC \$7/mmbtu: $\$55 + 25 = \$80/\text{mwh}$

Coal w/o CCS = $\$30 + 50 = \$80/\text{mwh}$

Coal w/ CCS = ??



Wind development driven by state policies + resource availability



Total: 25,369 MW (8,558 MW added in 2008)

Solar development driven by state policies + resource availability

- CA, NV, AZ, NM, CO

Installed capacity data are from the AWEA project database. Locations are based on matching the database with Platts POWERmap data; the physical location in the database, and other available data sources.

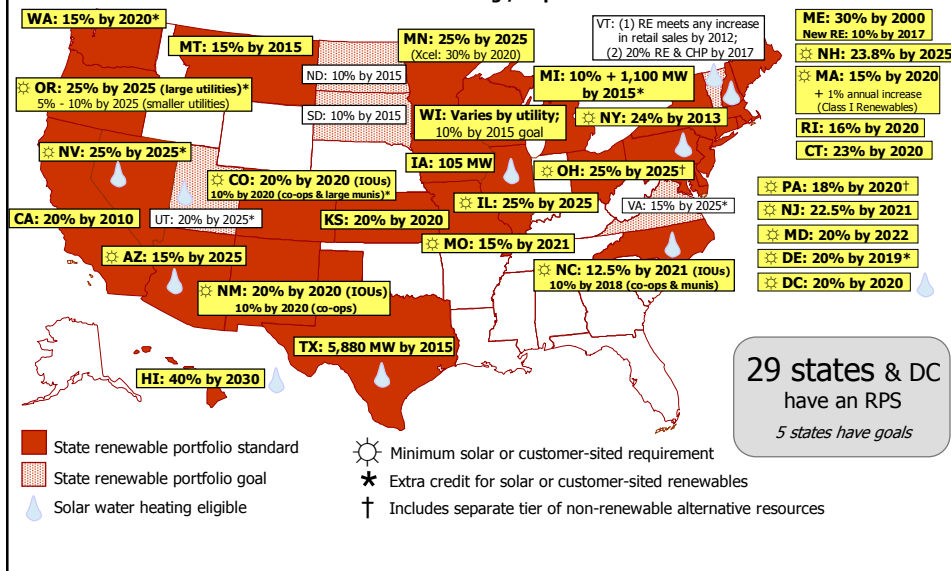
Wind Power Capacity Megawatts (MW)

- 1,000 - 7,200
- 100 - 1,000
- 20 - 100
- 1 - 20

U.S. Department of Energy
National Renewable Energy Laboratory

State Renewable Portfolio Standards

www.dsireusa.org / September 2009



New Mexico Renewable Energy Act: NMSA § 62-16-1
A Renewable Portfolio Standard (RPS) Law

- R.E.: solar, wind, biomass, geothermal
- Scope: IOUs, Co-ops (lower reqmts)
- RPS 5% of retail sales in 2006
10% of retail sales in 2011
15% in 2015, 20% in 2020
- Reasonable Cost Thresholds
- Annual Procurement Plans
- PRC's Diversity Rules – 20% Solar Target

NM: Aggressive Targets / Small State

	2007	2011	2015	2020
RPS	6%	10%	15%	20%
Total IOU MWh	15,000,000	15,900,000	17,000,000	18,300,000
R.E. MWh Req'd	898,000	1,586,000	2,557,000	3,665,000
Solar Target		2%	3%	4%
Solar MWh		317,000	511,000	733,000
Solar Need		100	170	240
Biomass Need		40	70	100
Wind as Fill-In		6%	9%	12%
Wind Mwh	898,000	951,000	1,534,000	2,199,000
Wind Need	320	340	550	780

Resource acquisitions affected by stakeholder preferences

	No. of Interveners	No. of Docs
Cancellation of 92 MW Solar Thermal	2	9
Approval of 40 MW Company-Owned PV + FIT	25	195

Net Metering

NMPRC Rule: Utilities must interconnect customer-owned generation via net-metering up to 80 MW

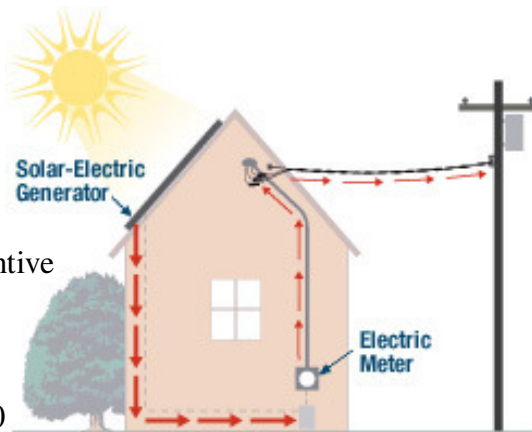
NMPRC Orders:

PNM Incentive Program:

- 2006 Small PV
- 2009 Large PV
- 2010 Solar REC Incentive

SPS Sm/Med/Lg 2009

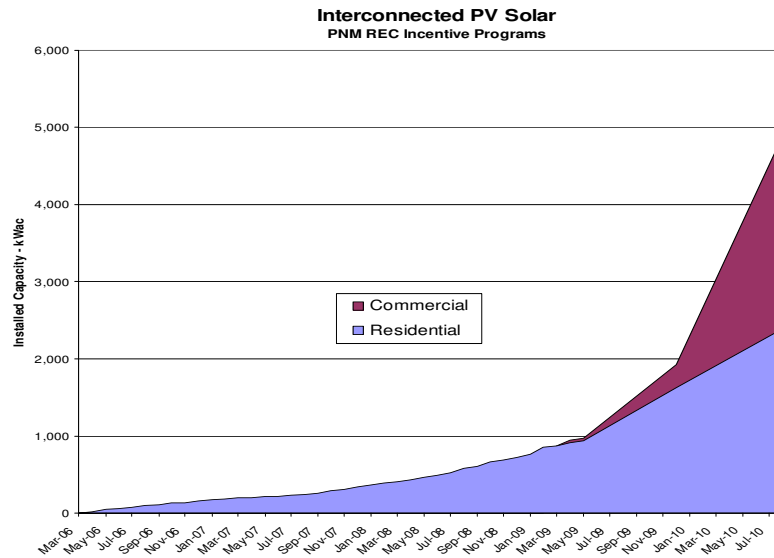
EPE Sm 2009/Med 2010



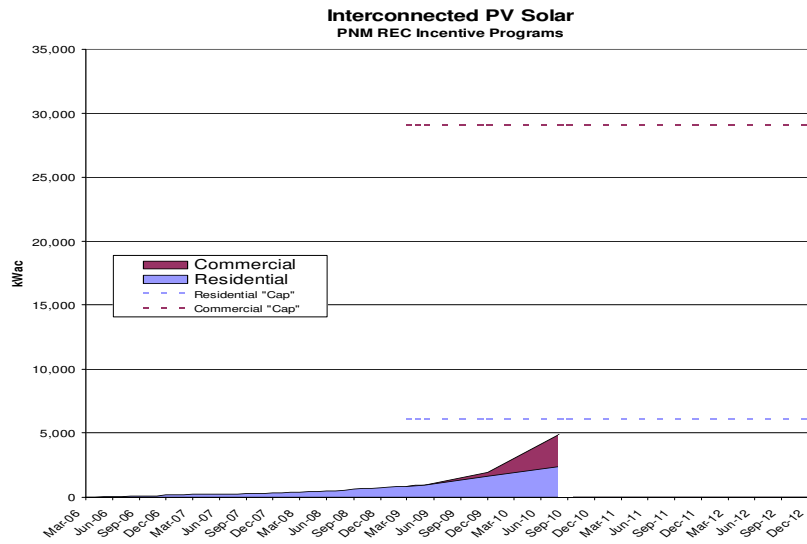
Solar REC Incentive Programs

Utility	Program	Incentive payment per kwh	Duration of payments
PNM	Residential (<=10kw)	\$0.12	12 years
	Commercial (10kw - 1 MW)	\$0.11 - \$0.14	20 years
EPE	Residential (<10kw)	\$0.13	12 years
	Comm'l (10 kw - 100kw)	\$0.155	12 years
SPS	Small (<=10 kw)	\$0.20	14 years
	Medium (10 kw - 100 kw)	\$0.20	10 years
	Large (100kw - 2MW)	By bid	
	Small Biomass (10 – 50kw)	\$0.08	14 years
	Med Biomass (50kw – 1MW)	\$0.08	10 years

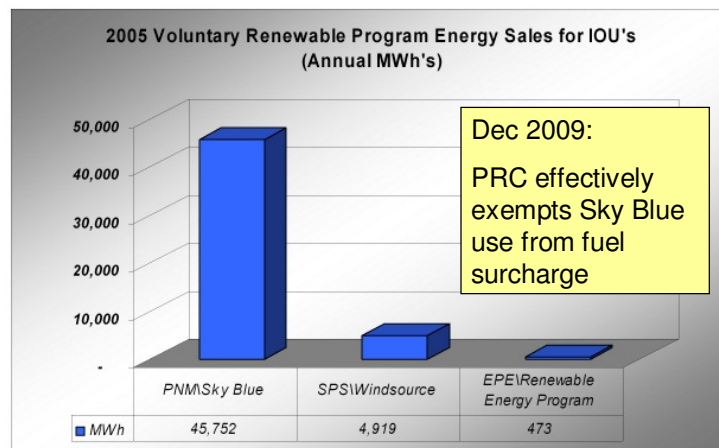
customer-owned PV incentive programs



Growth potential for customer-owned solar

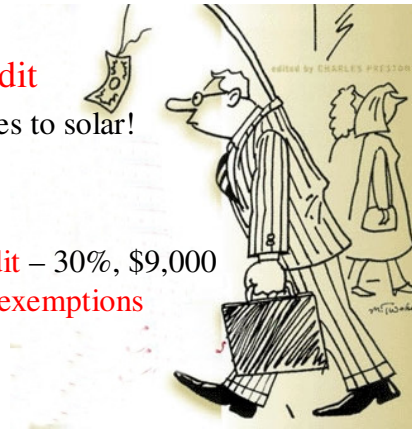


Voluntary Programs



New Mexico R.E. Tax Incentives

- **Renewable Energy Production Tax Credit**
 - Reduces consumer cost by 1¢ to 4¢ per kwh
 - One of the best in nation.
- **Advanced Energy Tax Credit**
 - “Clean coal” bill, also applies to solar!
 - 6% of eligible plant costs
- **Other Tax Credits**
 - **Homeowner Solar Tax Credit** – 30%, \$9,000
 - **Gross Receipts (Sales) Tax exemptions**
 - **Bio-diesel PTC**



Resources

- PRC Website on Energy Efficiency & Renewable Energy in New Mexico – www.nmprc.state.nm.us



- www.cleanenergynm.org - ENMRD website
- www.jasonmarks.com