



Renewable Energy

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Overview

- Additional FERC Perspective
- Renewable Energy Development
- Transmission Development Siting Issues
- Next Steps for DRBs

FERC Policy

- Cost Allocation and Planning NOPR
- FERC opportunity under the Federal Power Act to establish time-lines, coordinating principles and backstop cost principles.
- Lynch-pin is establishing national policy justification for renewable energy.
- Western States and renewable developers want to see harmonization between queue planning and transmission planning.

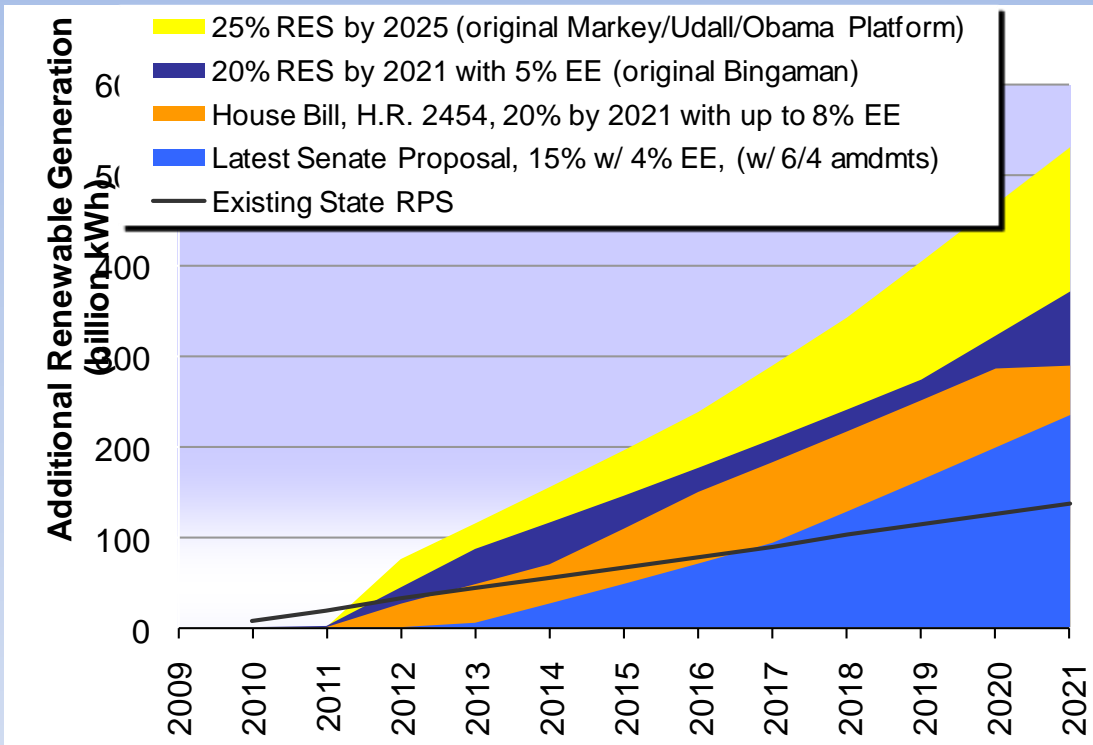
Supporting Renewable Facility Development

- Secretarial order prioritizing RE
- Renewable energy coordination offices
- Wind and solar conference for BLM field staff
- Stimulus act funding
- Fast-tracking projects
- Breaking the logjam for offshore wind

Government Commitment to Renewable Development

- Consolidation of all energy leasing (oil, gas, renewables) into a single office
- Reforming rules for wind to mirror oil and gas:
 - Competitive leasing rather than right-of-way
 - Grandfathering provision
 - Due diligence requirement
 - Allows preference for company with met tower
 - Royalties rather than rental fee

Renewable Energy Growth Probabilities



Siting Issues

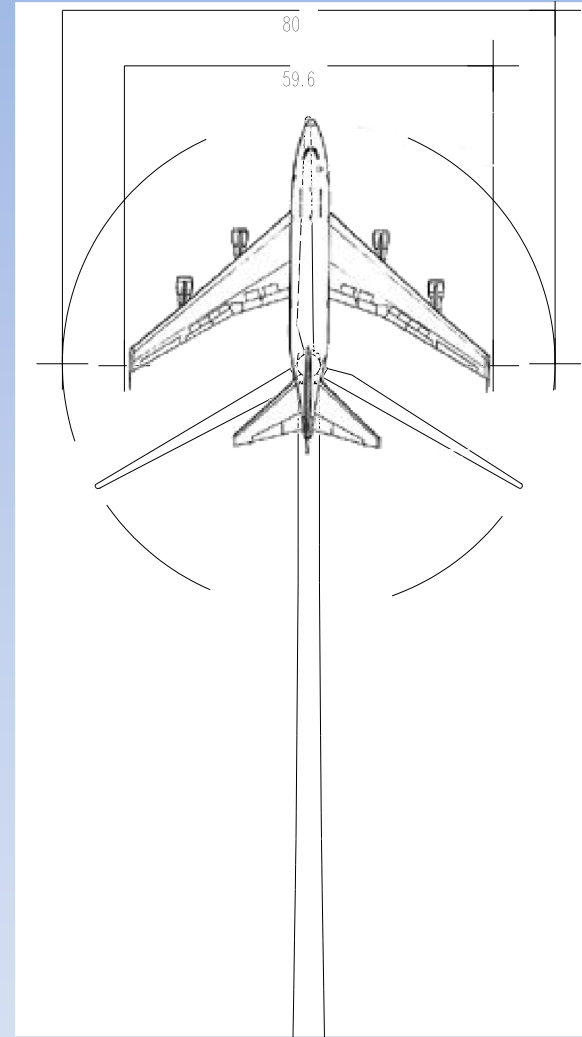
- Turbine reliability
- Aesthetics
- Sound
- Bird collisions
- Bird disturbance
- Bat collisions
- Big game
- Shadow flicker
- Ice
- Safety
- Property values
- Radar

Altamont Pass wind development area Livermore, CA, 1982

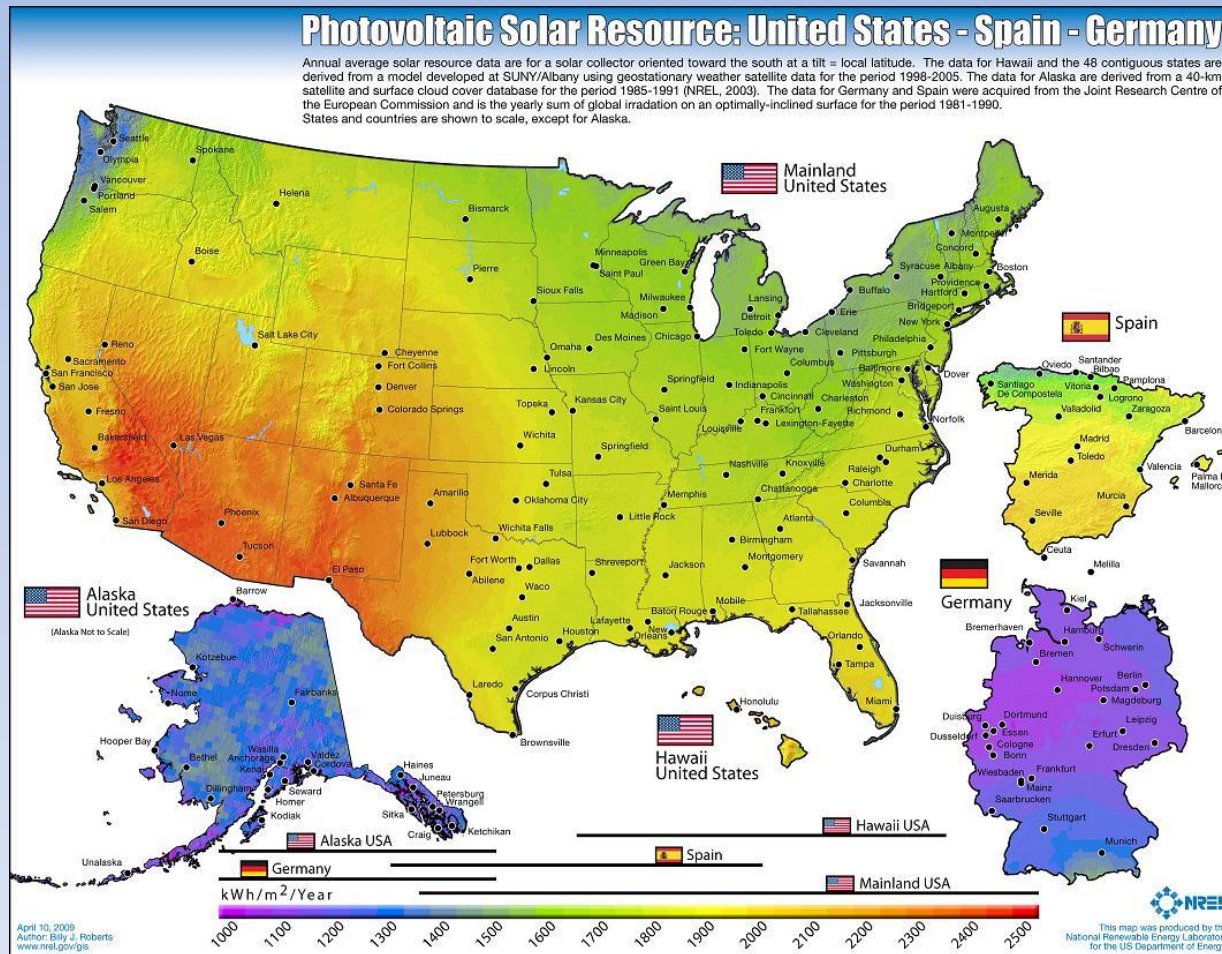


How big is a 2-MW wind turbine?

This picture shows a
Vestas V-80 2-MW
wind turbine
superimposed on a
Boeing 747 jumbo jet



Solar Resources in the US



What Goes Into a Solar Array



Photo – US DOE,
Brookhaven National
Laboratory



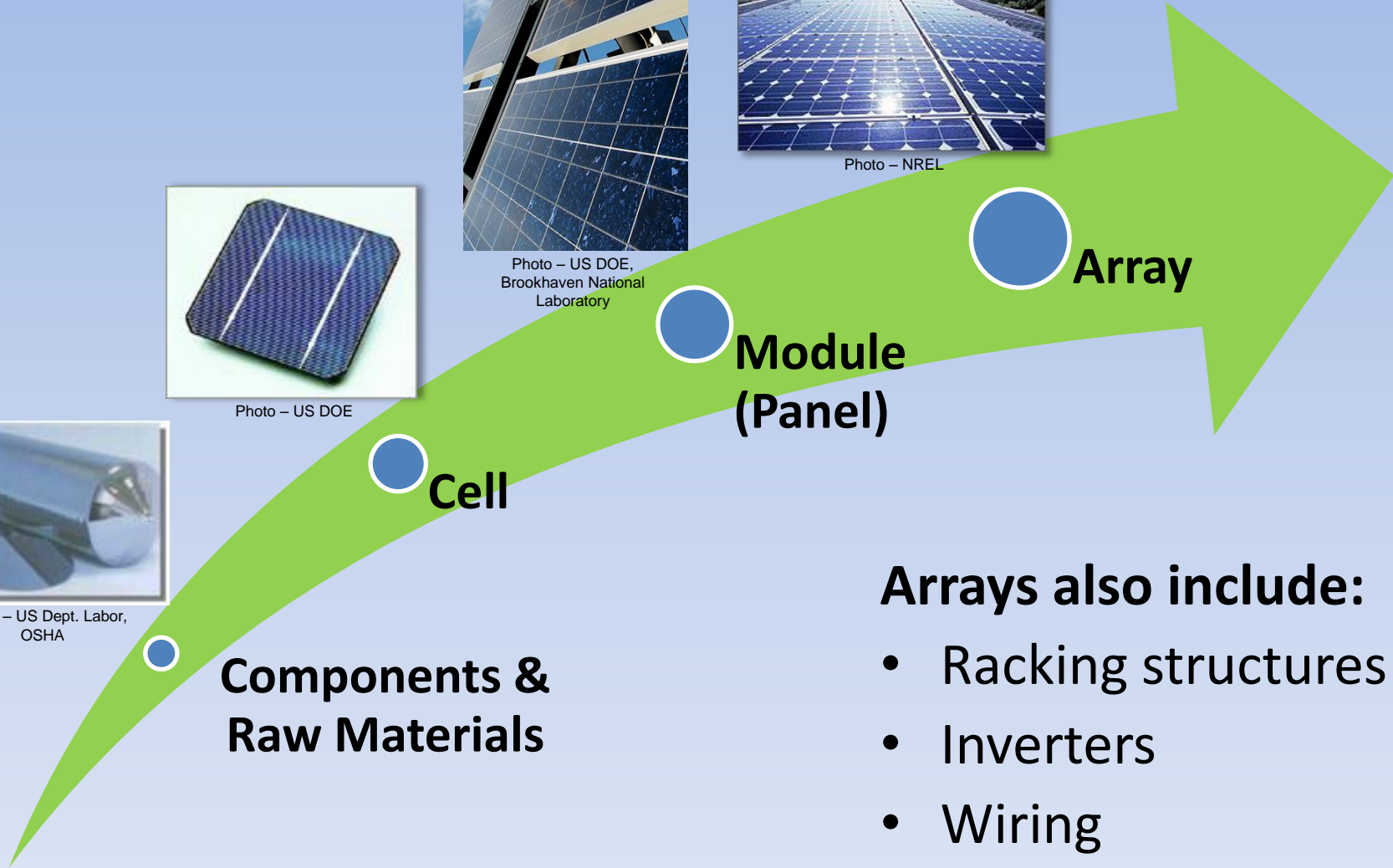
Photo – NREL



Photo – US DOE



Photo – US Dept. Labor,
OSHA



**Components &
Raw Materials**

Cell

**Module
(Panel)**

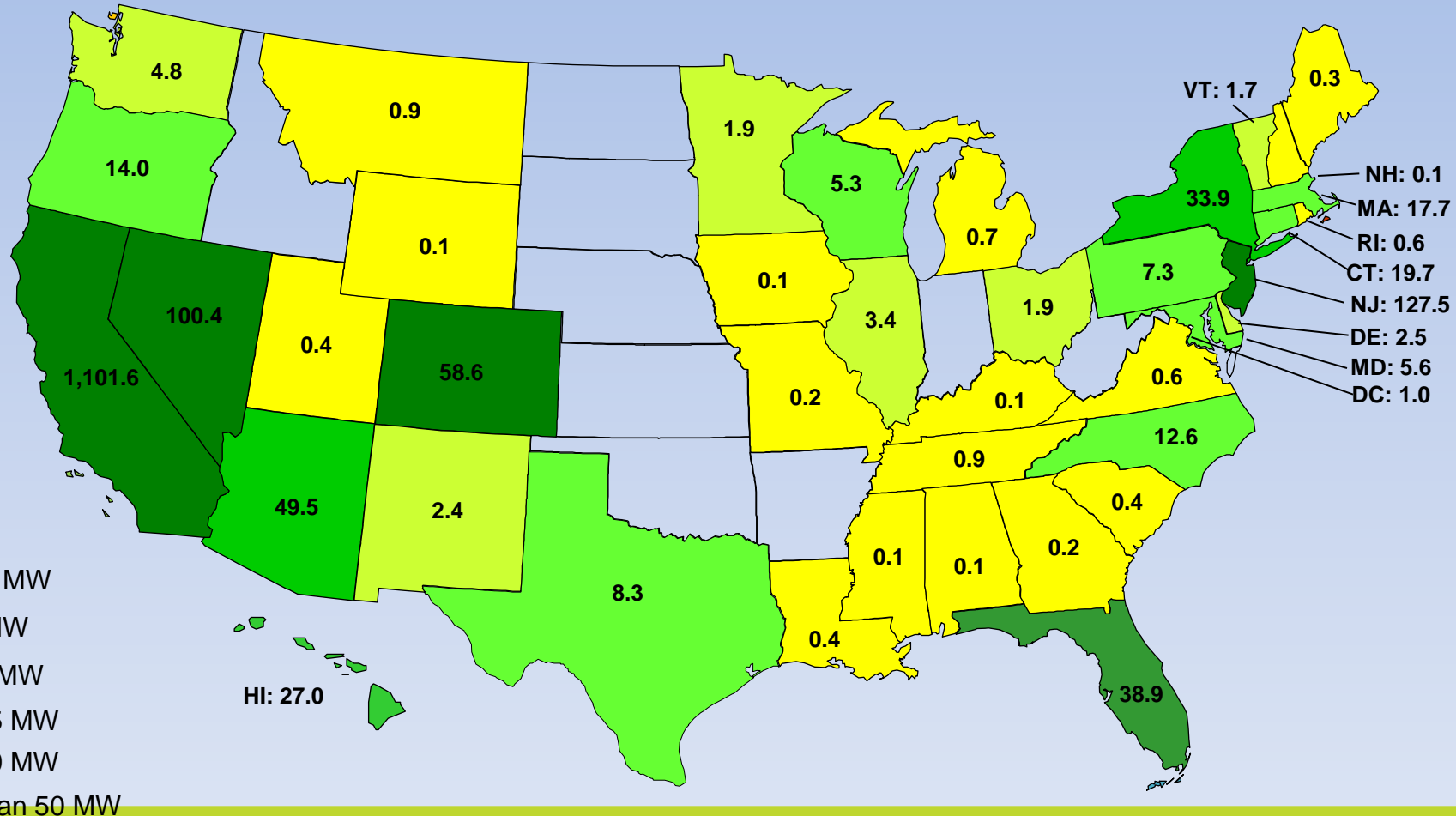
Array

Arrays also include:

- Racking structures
- Inverters
- Wiring
- Conduit

Cumulative Grid-Tied Solar Electric Capacity at the end of 2009

- 1,678 MW cumulative grid-tied PV and CSP in US at end of 2009



State Grid-Tied Solar Electric Capacity Rankings

Top 10 states ranked four ways:

- California isn't always the leader.
- Hawaii and New Jersey lead in per-capita installations in 2009.
- Nevada has most cumulative capacity per capita.

New Capacity in 2009

2009 New Capacity (MW)		
1	California	220
2	New Jersey	57
3	Florida	36
4	Arizona	23
5	Colorado	23
6	Hawaii	14
7	New York	12
8	Massachusetts	10
9	Connecticut	9
10	North Carolina	8
Other		29
Total		441*

Megawatts

Watts per Capita

2009 Installations (W per Capita)

1	Hawaii	10.4
2	New Jersey	6.6
3	California	6.0
4	Colorado	4.6
5	Arizona	3.5
6	Connecticut	2.5
7	Florida	1.9
8	Oregon	1.6
9	Massachusetts	1.4
10	Vermont	1.0
National Average		1.4*

Cumulative Capacity in 2009

2009 Cumulative Capacity (MW)		
1	California	1,102
2	New Jersey	128
3	Nevada	100
4	Colorado	59
5	Arizona	50
6	Florida	39
7	New York	34
8	Hawaii	27
9	Connecticut	20
10	Massachusetts	18
Other		78
Total		1,653*










2009 Cumulative (W per Capita)

1	Nevada	38.0
2	California	29.8
3	Hawaii	20.8
4	New Jersey	14.6
5	Colorado	11.7
6	Arizona	7.5
7	Connecticut	5.6
8	Oregon	3.7
9	Delaware	2.8
10	Vermont	2.7
National Average		5.4*

* State rankings do *not* include off-grid estimates. Includes PV and CSP.

Why Outrage and Conflict Occurs

Outrage and conflict occur because:

-  People feel rolled over
-  The project comes as a surprise
-  It raises fear and, for some, dread
-  Little opportunity for consultation and input
-  Lack of access to appropriate information
-  It is an unknown risk, rather than a familiar risk
-  It appears unfair or unnecessary
-  The project is controlled by others and they are seen as unresponsive or untrustworthy
-  The project may create visual impacts, loss to property values, or negative impacts to lifestyle

$$\text{Risk} = \text{Hazard} + \text{Outrage}^*$$








Regardless of the degree of REAL hazard,
if outrage is high, the project is at risk

Reducing outrage and conflict in the local community gives
your project the best chance for regulatory approval



* Dr. Peter Sandman

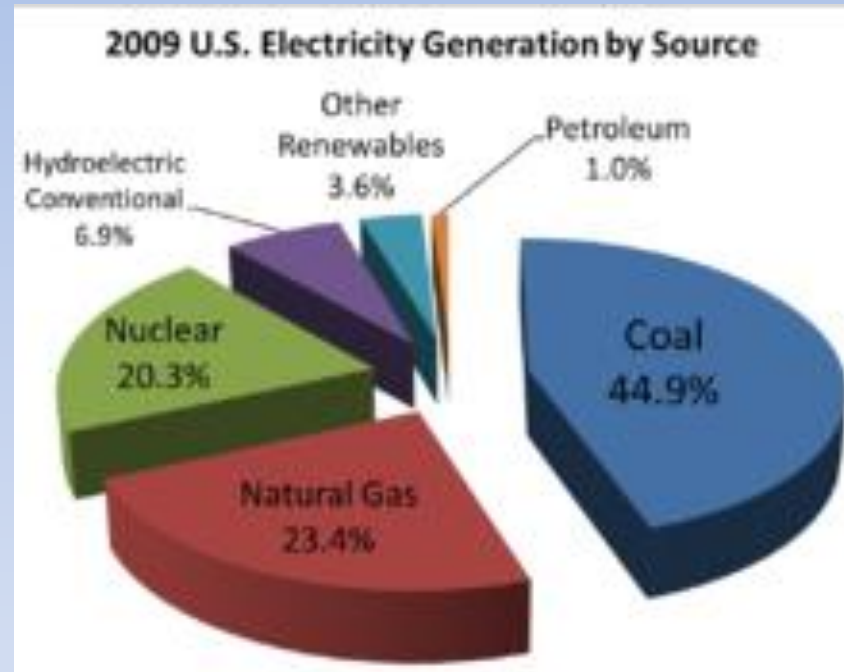
Examples of Outrage Management Strategies

-  Engage and involve local stakeholders early
-  Promise and demonstrate transparency, inclusiveness, fairness, accessibility, consistency, responsiveness, and trustworthiness with stakeholders
-  Tell your story widely
-  Ensure that all can understand your project's need, necessity, benefits and technical details as well as the risks and how they will be mitigated
-  Ensure the entire team is telling the same story
-  Be responsive
-  Design together conflict resolution processes

Examples of Outrage Management Strategies

- Join SEIA and AWEA Siting Task Forces
- Contact Department of the Interior Bureau of Land Management Field Offices to offer assistance.
- Outreach to solar and wind development firms – attend AWEA and SEIA national/annual conferences.

Projected Costs & Schedules of New Nuclear Plants



Projected Costs & Schedules of New Nuclear Plants

Projected Costs: Nuclear power accounts for 20% of U.S. electricity production

Economics of new nuclear power plants controversial subject. For 2 Units:

- March 2008 — For 2 new AP1000 reactors in Florida, **Progress Energy** announced base cost of \$9.4B, but with other elements the total would be about **\$14B**
- May 2008 — For 2 new AP1000 reactors at the **Virgil C. Summer Nuclear Generating Station** in South Carolina, South Carolina Electric and Gas Co. and Santee Cooper expected to pay **\$9.8B**