Wind Energy Workshop

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Senior Advisor to the Director

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“To truly transform our economy, protect our security, and save our planet from the ravages of climate change, we need to ultimately make clean, renewable energy the profitable kind of energy.”

President Obama, February 24 2009
Energy Demand

- World energy consumption increasing rapidly
  - Higher in developing countries
  - Parallels global population growth
- US energy consumption leveling off
Domestic Energy Consumption 2011

- 81% of energy consumed produced from fossil fuels
- 91% of coal produces electricity
  - 46% of electricity produced by coal
- 55% of renewable energy produces electricity
  - Only 12% of electricity produced
Power Sector: A Major Share of US Air Emissions


SO2, 2009: 9.5 Million Tons

Electric Power: 5.7 Million Tons (60%)

Coal: 2.6 Million Tons (40%)

Other Sectors: 3.8 Million Tons (40%)

CO2, 2008: 6.5 Billion Tons

Electric Power: 2.6 Billion Tons (40%)

Coal: 3.9 Billion Tons (60%)

Other Sectors: 3.8 Million Tons (40%)

SO2, 2009: 9.5 Million Tons

Electric Power: 13.3 Million Tons (87%)

Coal: 2.0 Million Tons (13%)

Other Sectors: 5.7 Million Tons (40%)

NOx, 2009: 15.3 Million Tons

Electric Power: 2.6 Million Tons (13%)

Coal: 13.3 Million Tons (87%)

Other Sectors: 5.7 Million Tons (40%)

Coal-fired power plants: vast majority of power sector air emissions
Climate is changing

- US and other countries experiencing record heat waves
  - Jan – July hottest 6 months on record
  - 4.3° above average
- Top 4 hottest 12-months are the last 4 years
- June 2012 -- 4\textsuperscript{th} warmest global temperatures on record (land and ocean)
Climate change effects on wildlife

- Prolonged drought
- Extreme weather
- Rising sea levels
- Loss of sea ice
- Invasive species
- Warmer water temps
- Disease-pathogens expanded ranges
## Comparative Impacts

<table>
<thead>
<tr>
<th>Source</th>
<th>Resource Extraction</th>
<th>Fuel Transportation</th>
<th>Construction of Facility</th>
<th>Power Generation</th>
<th>Transmission and Delivery</th>
<th>Decommissioning of Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>Highest Potential</td>
<td>Lower Potential</td>
<td>Lower Potential</td>
<td>Highest Potential</td>
<td>Moderate Potential</td>
<td>Lower Potential</td>
</tr>
<tr>
<td>Oil</td>
<td>Higher Potential</td>
<td>Highest Potential</td>
<td>Lower Potential</td>
<td>Higher Potential</td>
<td>Moderate Potential</td>
<td>Lower Potential</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Higher Potential</td>
<td>Moderate Potential</td>
<td>Lowest Potential</td>
<td>Moderate Potential</td>
<td>Moderate Potential</td>
<td>Lowest Potential</td>
</tr>
<tr>
<td>Nuclear</td>
<td>Highest Potential</td>
<td>Lowest Potential</td>
<td>Lowest Potential</td>
<td>Moderate Potential</td>
<td>Moderate Potential</td>
<td>Lowest Potential</td>
</tr>
<tr>
<td>Hydro</td>
<td>None</td>
<td>None</td>
<td>Highest Potential</td>
<td>Moderate Potential</td>
<td>Moderate Potential</td>
<td>Higher Potential</td>
</tr>
<tr>
<td>Wind</td>
<td>None</td>
<td>None</td>
<td>Lowest Potential</td>
<td>Moderate Potential</td>
<td>Moderate Potential</td>
<td>Lowest Potential</td>
</tr>
</tbody>
</table>
Renewable Portfolio Standard Policies

29 states + Washington DC and 2 territories have Renewable Portfolio Standards

CA: 33% x 2020

www.dsireusa.org
FWS Response

- Land-based Wind Energy Guidelines
  - Voluntary
  - Birds, bats, other species
  - Tiered approach

- Eagle Conservation Plan Guidance
  - Bald and Golden Eagles
  - Implement BGEPA
  - Tiered/staged approach
Overview

• Promote siting wind projects to avoid significant impacts
• Encourage scientifically rigorous surveys, monitoring and research
• Produce comparable data
• Mitigate significant adverse impacts
• Voluntary WEG and ECPG
# Wind Energy Conservation Planning

## Wind Energy Guidelines

<table>
<thead>
<tr>
<th>Tier 1</th>
<th>Tier 2</th>
<th>Tier 3</th>
<th>Tier 4</th>
<th>Tier 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary screening</td>
<td>Site specific reconnaissance</td>
<td>Site specific surveys and risk assessment (up to 2 yrs)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 3 Yrs Prior
- 2 Yrs Prior
- 1 Yr Prior
- Issue Permit and Initiate Construction
- 1 Yr Post
- 2 + Yrs Post

### Fatality Monitoring

### Research

## Eagle Conservation Plan Guidance

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
<th>Stage 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial site assessment</td>
<td>Site specific surveys (2 to 3 yrs)</td>
<td>Predicting eagle fatalities</td>
<td>Avoid and mitigate risk</td>
<td>Issue eagle take permit</td>
</tr>
</tbody>
</table>

## Endangered Species Act

| Species surveys | HCP prep | Permit review and intra-issue BO and Service consultation ITS | Post-construction monitoring and reporting |

March 2012
Identify Species of Concern

Goals of training

- Improve understanding of WEG and ECPG
- Improve ability to implement WEG and ECPG
- Reduce risks to wildlife from wind projects
Status of the ECPG

• Version 1 – Feb 2011
  • Public comments
  • Peer review comments
  • Revised extensively

• Version 2 – in review
  • Draft technical appendices in workshop notebooks
Next steps

Regional workshops
- Service will work with States, tribes, industry and NGOs
- Time and location – TBD

Online materials
- NCTC videos
- Web-based
- Publicly accessible
LOGISTICS

- Start on time
- Qs & As
- Meals
- Breaks
- NCTC facilities