

Do Environmental Laws Hinder Development of Renewable Energy?

Is Renewable Energy Development Bad for the Environment?





## **Altamont Pass Wind Farm**

- East of San Francisco
- 1981; one of oldest
- ~7,000 turbines
- ~29 square miles

- 630,000 kW
- 550,000,000 kWh
- Power a city of 250,000
- 1% North CA electricity

## Altamont

28–43 golden eagles killed by turbine blades each year



# Altamont 2-Year Study

182 dead birds, including 119 raptors

- Collisions with turbines: 55% of raptor deaths
- Power line electrocutions: 8%
- Collisions with wires: 11%
- Unknown causes: 26%



### Bats



- Populations in decline
- 1,400–4,000 killed at WV wind facility in 2003
- Fatalities:
  - Highest: forested ridges eastern US
  - Lowest: Rockies, Pacific NW
  - Variable: upper, Midwestern US

#### Bats

- Certain species susceptible to turbines
- "Migratory tree bats" roost in trees, migrate long distances
- No federal protection; only T&E species

## Mojave Desert Solar Projects

BLM land

Between Mojave National Preserve and Joshua Tree National Park
Applications for 14 solar, 5 wind energy projects (6 CSP approved last 3 mos)

## Mojave Desert Solar Projects

- Desert tortoise (federally threatened)
- Potential destruction of habitat
- Limited water supply

#### **Solar Thermal**

- Water needed for:
  - Cleaning mirrors
  - Cooling steam exhaust (wet-cooling)
- Parabolic trough = same amount of water as coal, nuclear (800 gal/MWh)

## What Environmental Laws Apply?

#### Altamont violates:

- Migratory Bird Treaty Act
- Bald and Golden Eagle Protection Act
- CA Fish and Game Code

## What Environmental Laws Apply?

#### Mojave solar:

- National/State Environmental Policy Acts
- Endangered Species Act
- Clean Water Act
- State, local laws

## **Federal Laws**

- NEPA (CEQ)
- MBTA (USFWS)
- ESA (USFWS)
- CWA (EPA, COE)
- Bald and Golden Eagle Protection Act (USFWS)
- NHPA (NPS)



## National Environmental Policy Act

- Federal lands/federal nexus
- Decision-making process
  - EA/FONSI or EIS/ROD
  - Public involvement required
  - Very time-consuming

## **Migratory Bird Treaty Act**



- Birds that live, reproduce, or migrate within or across international borders
- Not only T or E
- Protects 836 species, 58 legally hunted
- Strict liability; no permits to cover accidental impacts



## **Strict Liability**

- Responsibility for damages regardless of fault
- Often applies to inherently hazardous activities



- Central
- Mississippi
- Pacific
- Atlantic

## **Migratory Flyways**

## Bald and Golden Eagle Protection Act

- Bald and golden eagles, parts, nests, eggs
- Golden Eagle Nest Take
   permit to move a nest
- No permits to cover accidental impacts

#### **Endangered Species Act**

- §7 consultation recommended
  - List of T&E species, critical habitats from USFWS, state
  - BO: Jeopardy of continuation of species, adverse habitat modification
  - §9 prohibition of take
    - Incidental Take Permit; exempts project from prohibitions, other permitting requirements

## **Endangered Species Act**

- Can apply for Incidental Take Permit (ITP) if no §7 consultation
  - Requires Habitat
     Conservation Plan
  - Triggers federal action, consultation
  - Triggers NEPA (EA or EIS)



#### Clean Water Act §402 NPDES Permit Program

- Regulates point sources discharge (pipes, man-made ditches)
- Land disturbance =/> 1 acre: NPDES General Stormwater Permit for construction (clearing, grading, excavation)
- Individual Stormwater Permit for construction if large site, sensitive areas
- 30-day public review

## Clean Water Act § 404

- Regulates placement of dredged/fill materials into wetlands, "Waters of the US"
- General Permit: Minimal adverse impacts
- Nationwide Permit: 50 types for construction
- Individual Permit for
  - significant impact to waters, wetlands
  - activities covered by no other permits
    - 6-12+ months
    - Can require costly studies, EIS

## Do environmental laws inhibit development of renewable energy projects?

- NEPA: Costly, time consuming; developers avoid federal lands
- ESA: Incidental Take Permit = NEPA
- CWA Individual Permit may require EIS = NEPA



## **Visual Impacts**

- No specific federal law
- Usually evaluated in EA/EIS (NEPA)
  - State/local laws
    - Coastal areas

#### **Lessons from Altamont**

- National Wind Coordinating Committee (NWCC) to address wind/avian issues
- Studies to prevent recurrence:
  - Paint blades to increase visibility
  - Understand raptor hearing to avoid turbines
  - Insulate wires, cover parts of poles, design lines to to avoid electrocution
  - Most project power lines now buried
  - Tubular towers rather than lattice

## **Far Less Raptor Mortality**



- Fatal flaw analysis
- Wildlife surveys before, after installation
- Site redesign
- Habitat loss mitigation



 Sonar "jamming" device; deter turbine ultrasound emissions

~Bat

Paint turbines colors less attractive to insects

#### **Solar Thermal**

- Dry-cooling (air cooled)
  - Very little water
  - Less efficient; more expensive
- Hybrid wet/dry: 10% of water 97% of cases
- Gas instead of steam
- Mojave: 2 plants wet-cooling (private land, dedicated water); others dry-cooling

# How to tell if your apartment is on a major bird migration route

#### **Annual Bird Deaths**

Cats: Collisions with plate glass: **Pesticides:** Collisions with vehicles: Cell towers: Oil, wastewater pits: Collisions with tall structures: Habitat loss: Wind turbines:

100s of millions 97.5 million 72 million 60 million 40-50 million 2 million 1.25 million unknown 33,000

- Exxon Valdez oil spill: 500,000 migratory birds died
- Florida coal-fired power plant, one day: 3,000 birds died during migration
- Coal, nuclear power plants: Major habitat loss





![](_page_33_Picture_0.jpeg)

![](_page_34_Picture_0.jpeg)

![](_page_35_Picture_0.jpeg)

![](_page_36_Picture_0.jpeg)

![](_page_37_Picture_0.jpeg)