



Renewable Energy in the California/Nevada Deserts

**How responsible planning and analysis can
help avoid the negative impacts of renewable
energy on ecosystems and species**

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Renewable Energy Technologies & Public Land



“There’s no such thing as a free lunch.”

Utility-scale solar

- Up to 5-10 acres/MW
- Frequently sited in desert tortoise habitat
 - Major issues with Endangered Species Act consultation
- Early projects completely graded
 - Modern projects will be primarily mowed
- Photovoltaic vs. Solar thermal
- Conflicts with communities



Utility-scale solar



Utility-scale solar



Utility-scale solar



Geothermal energy

- Small facilities producing small amounts of energy
- Benefit of round-the-clock production
- Frequently sited near surficial thermal water features
- In Great Basin, hot springs are source of biodiversity
- According to USGS: “Changes in surficial features and land elevations accompanying geothermal development should be viewed as the rule, rather than the exception.”

Geothermal energy



Lithium production

The background image shows a vast desert landscape under a clear sky. The sun is low on the horizon, creating a bright glow and casting long, soft shadows. The terrain is arid, with scattered, dry-looking shrubs and small trees. In the distance, a range of mountains is visible, their peaks softened by a light atmospheric haze. The overall color palette is dominated by warm tones of orange, yellow, and brown, contrasted with the pale blue of the sky.

- Open-pit mining or brine evaporation
- Typical impacts of open-pit mining:
 - Direct habitat loss
 - Impacts to groundwater table
 - Impacts to communities
- Brine evaporation impacts:
 - Direct habitat loss
 - Significant groundwater consumption

Lithium production



Lithium production

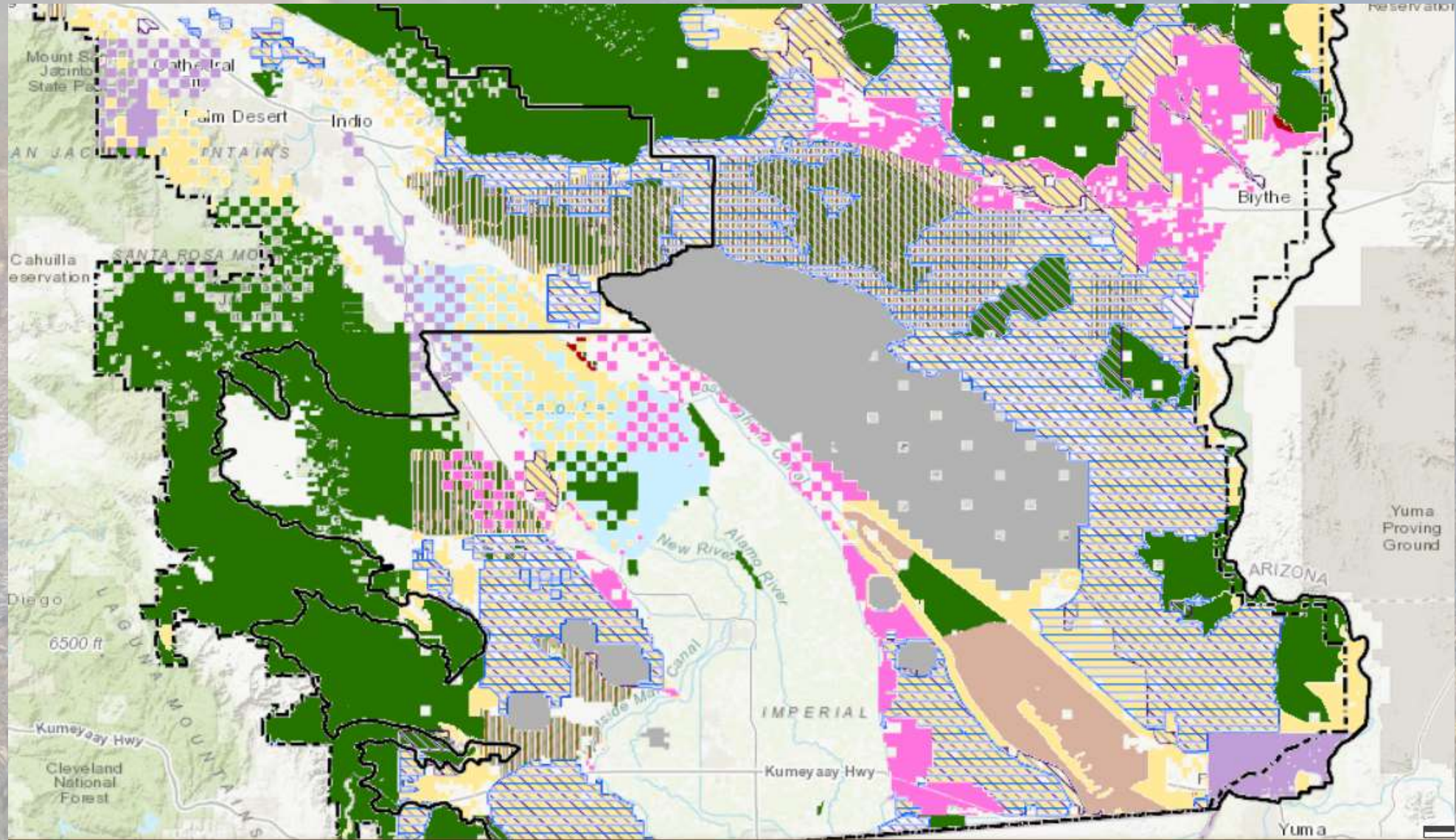


What to do?

- Environmental impacts of renewable energy technologies **cannot be eliminated**. But they can be **minimized**.
- 1st: focus on distributed resources
- 2nd: large-scale geospatial planning
- 3rd: site-specific mitigations
- 4th: compensatory mitigation

Spatial planning

California's Desert Renewable Energy Conservation Plan



Planning



- Lithium production: gov't could mandate standards, promote more sustainable technologies
- Large-scale solar: need geospatial planning West-wide; gov't could mandate minimum panel efficiencies; mandate other best practices like mowing
- Geothermal energy: shouldn't be sited near sensitive habitats

Planning



Planning minimizes environmental impacts.

Minimizing impacts avoids litigation & conflict.

Which means more & faster renewable energy deployment.

Thank you



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