Solar, Wind, and Geothermal Resources and the DRECP

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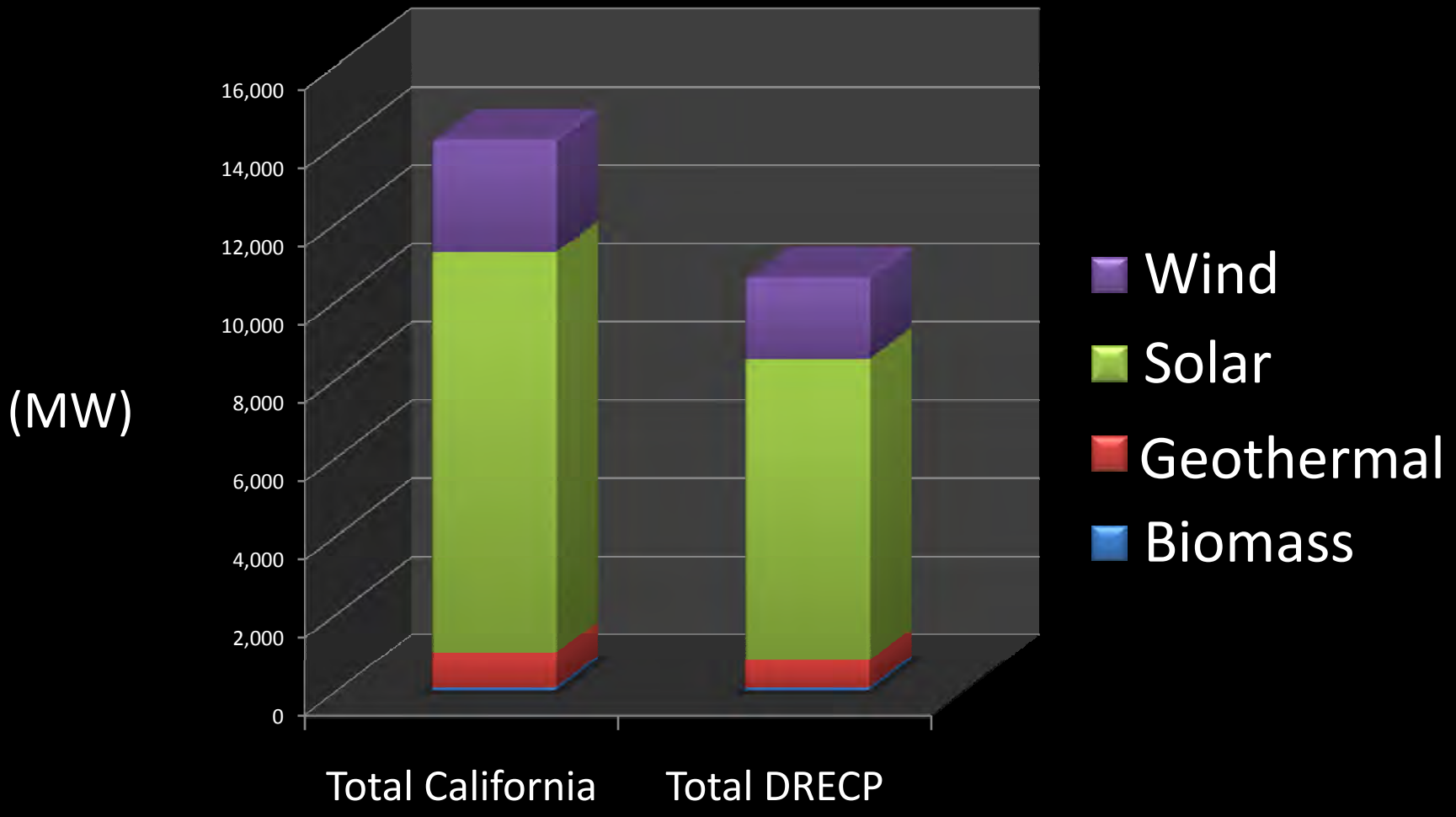
How Many Renewable Resources needed to reach RPS goal?

- Google Analysis
- RETI State wide Analysis

DRECP a major source of Renewable Energy needed for 33% RPS



Estimates for Solar Generation Capacity needed to reach 33% RPS

- Solar needed 7,454 - 9,487 MW
- Wind needed 2,086 – 6,135 MW
- Geothermal needed 578 - 1393 MW

Estimates within DRECP of Solar Resources needed to reach 33%

- Solar range needed 7,454-9,487 MW

- Estimate of Acre/MW
  - RETI 6.4 Acres/MW
  - NREL 5-9 Acres/MW
  - ARRA 6-8 Acres/MW

- Solar project footprint acreage needed (50,000-120,000) for 2020 goal

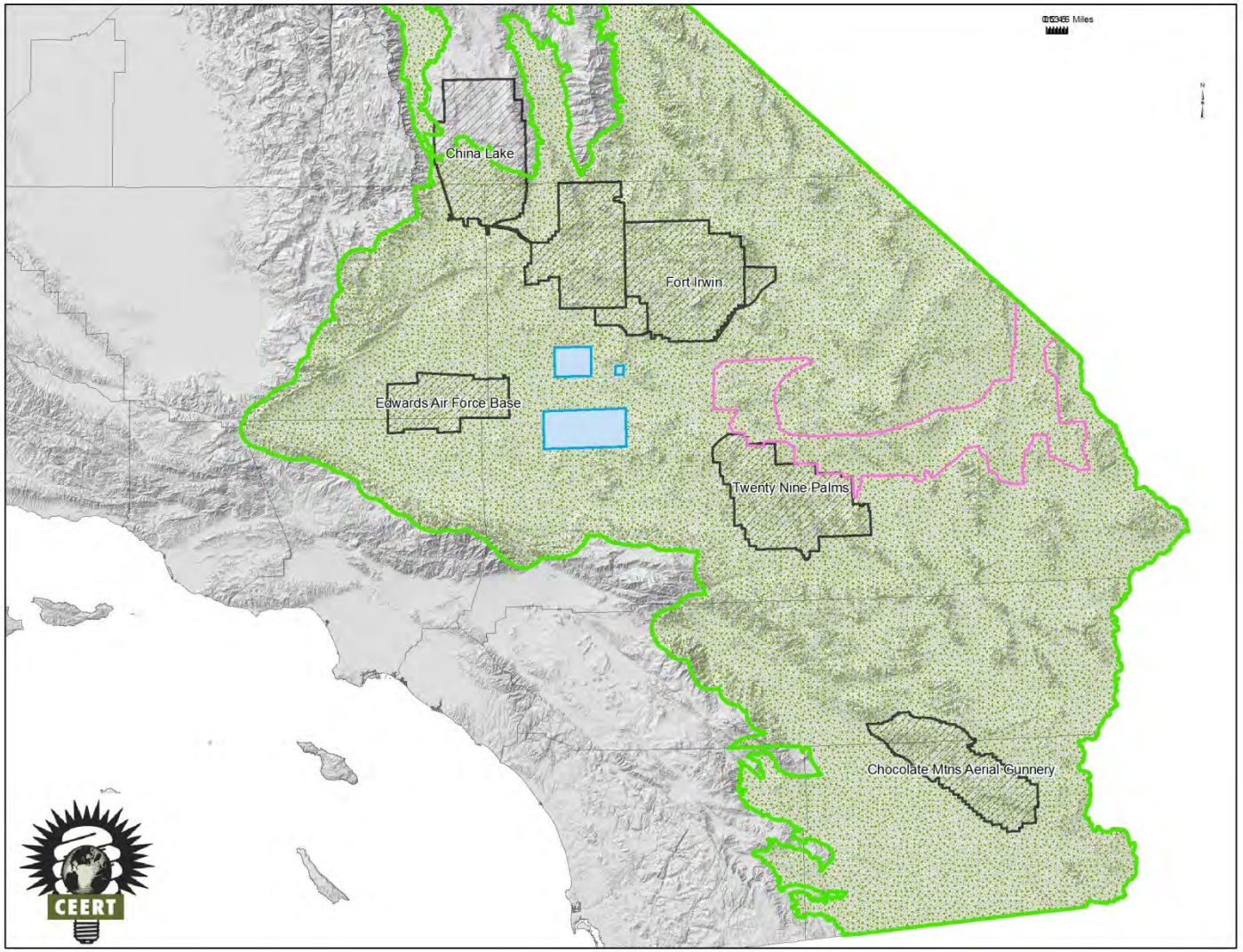
Size Reference

= 5,000 acres = 550 - 850 MW

= 50,000 acres = Low Estimate

= 120,000 acres = High Estimate

= Monument = 1,200,000 acres


0 1 2 3 4 5 6 Miles
N
China Lake
Fort Irwin
Edwards Air Force Base
Twenty Nine Palms
Chocolate Mtns Aerial Gunnery
CEERT

Solar Parabolic Troughs

Solar Power Towers

Stirling-Engines

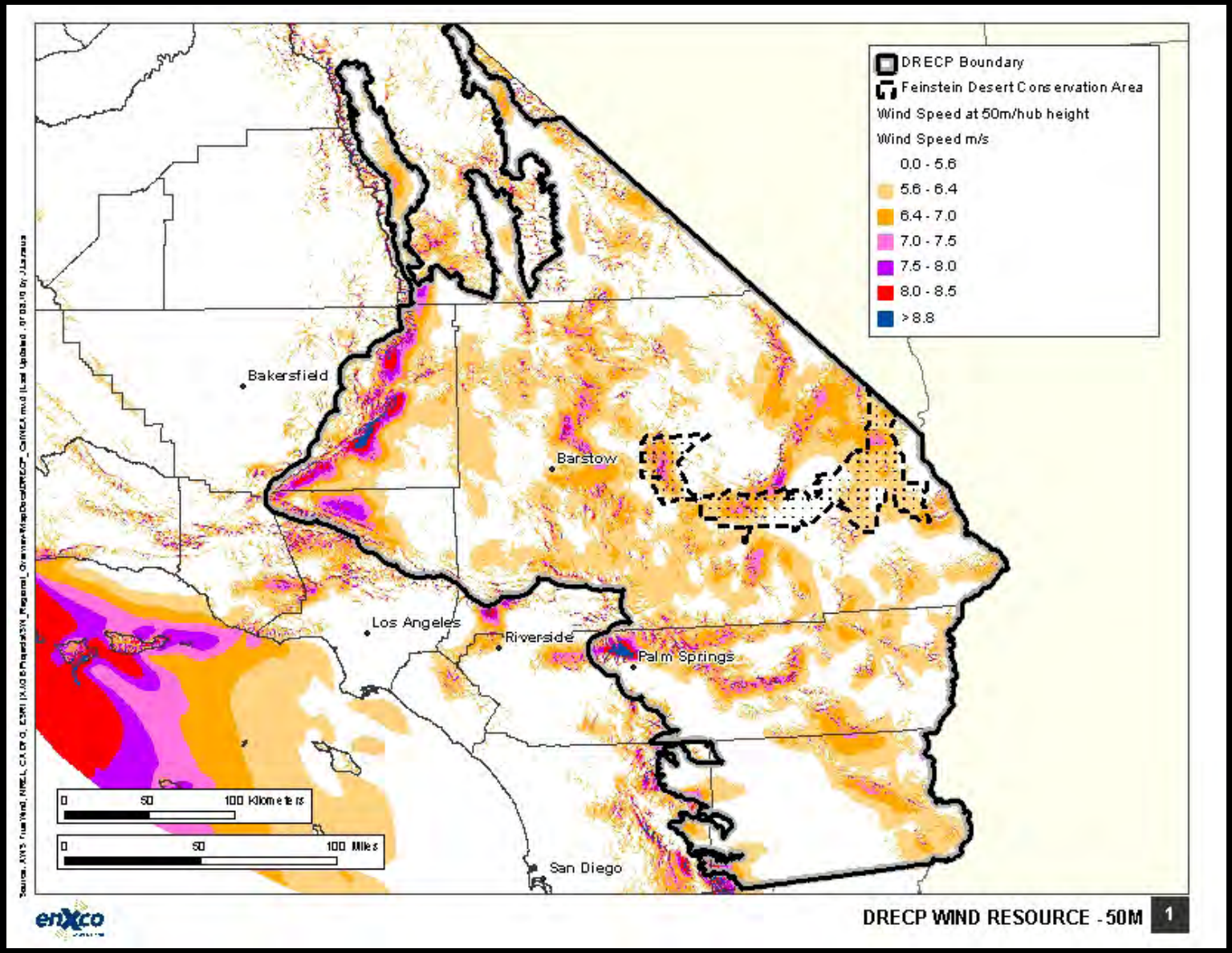
PV and thin-film PV

Wind Technology

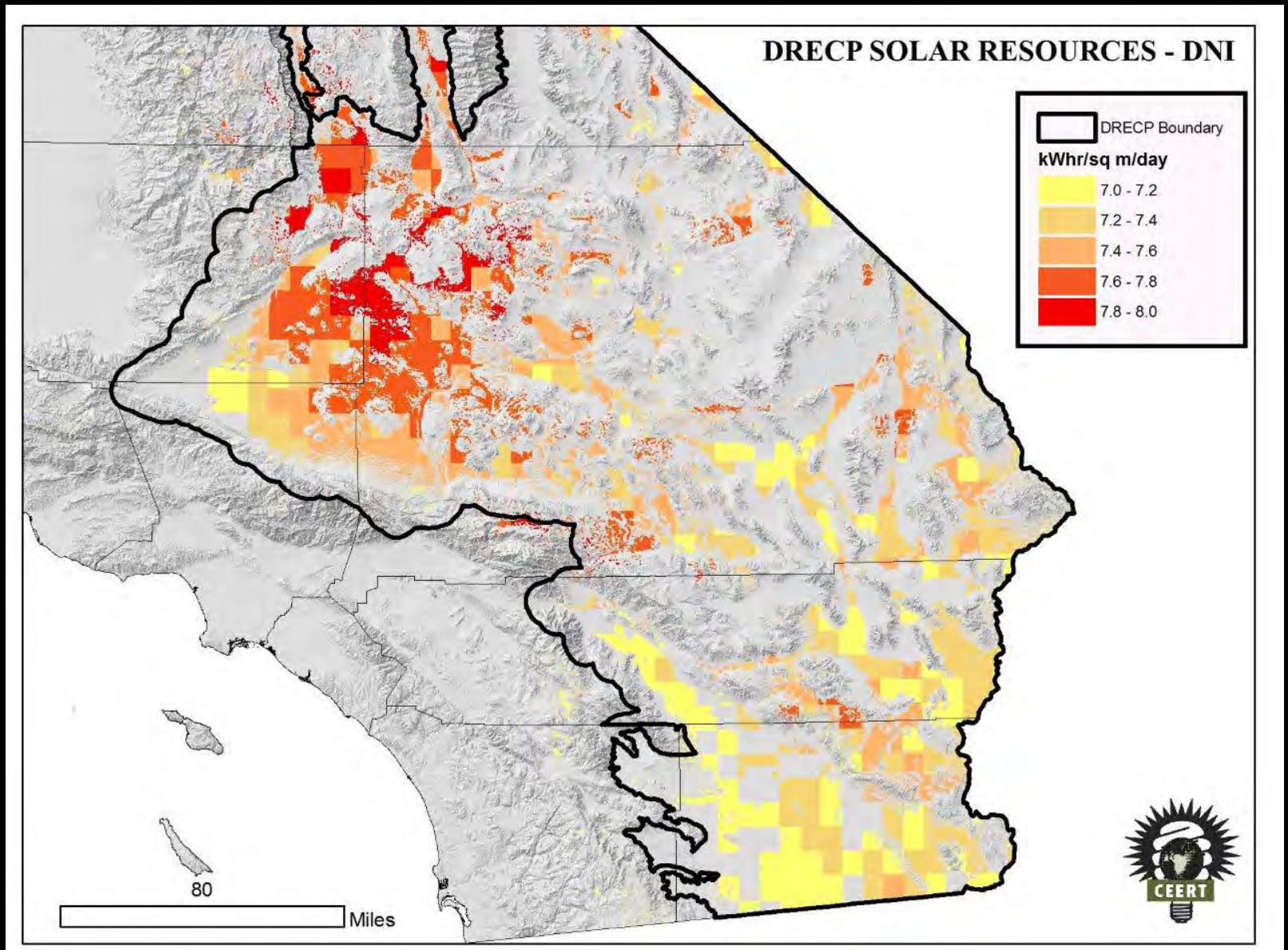
Geothermal

Resource Maps

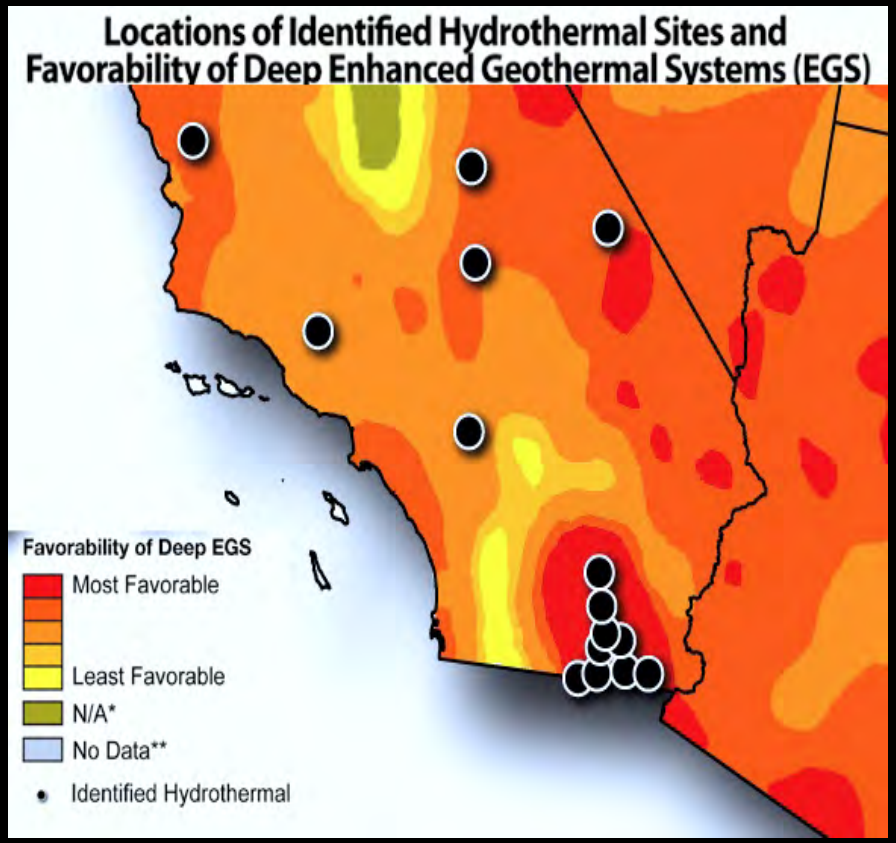
Wind Resources



Solar Resources



Geothermal Resources



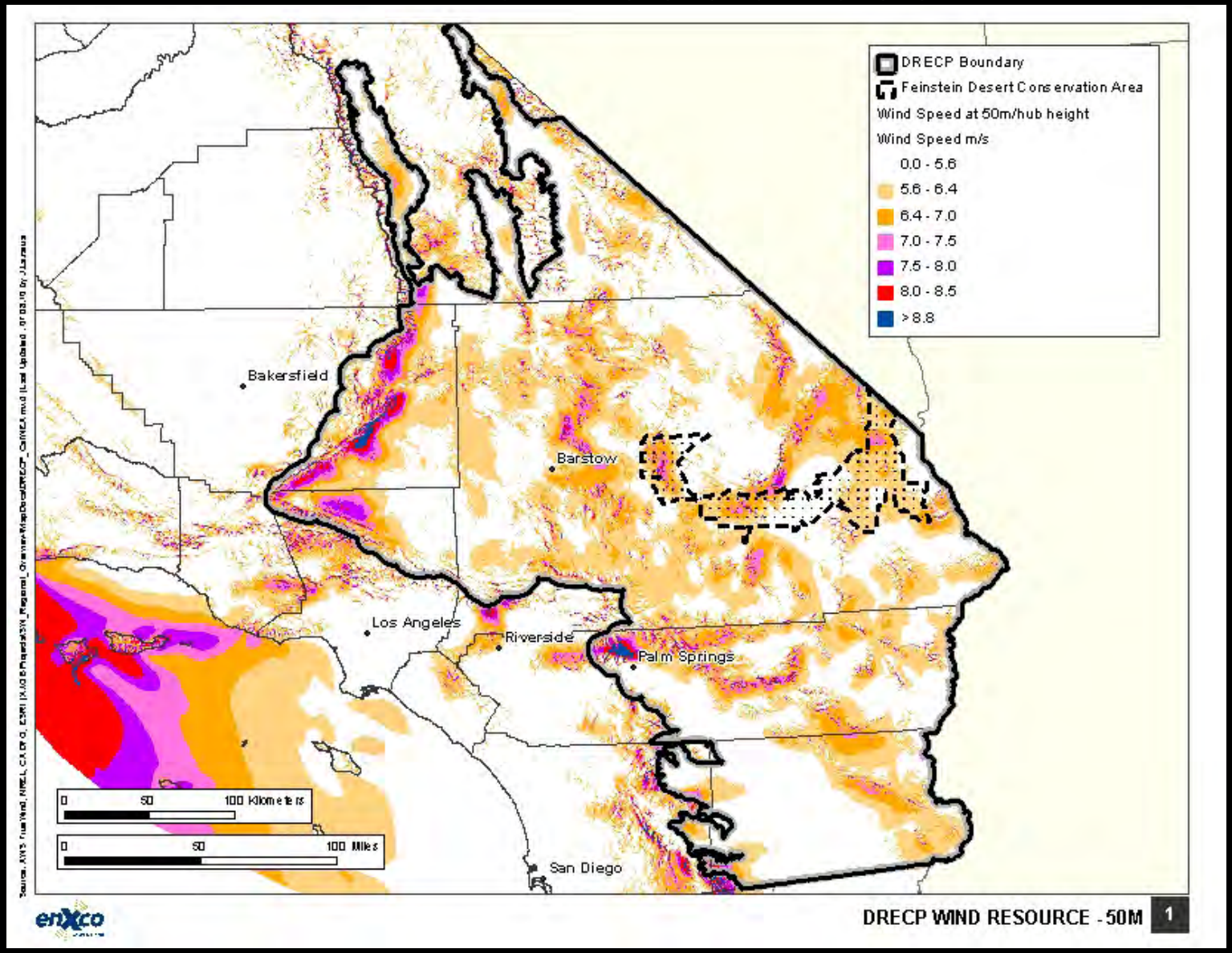
Wind Siting

- Wind Speed
- Military Flight paths and radar
- General Compatibility (Environmental Concern, proximity to transmission and infrastructure, facility design)

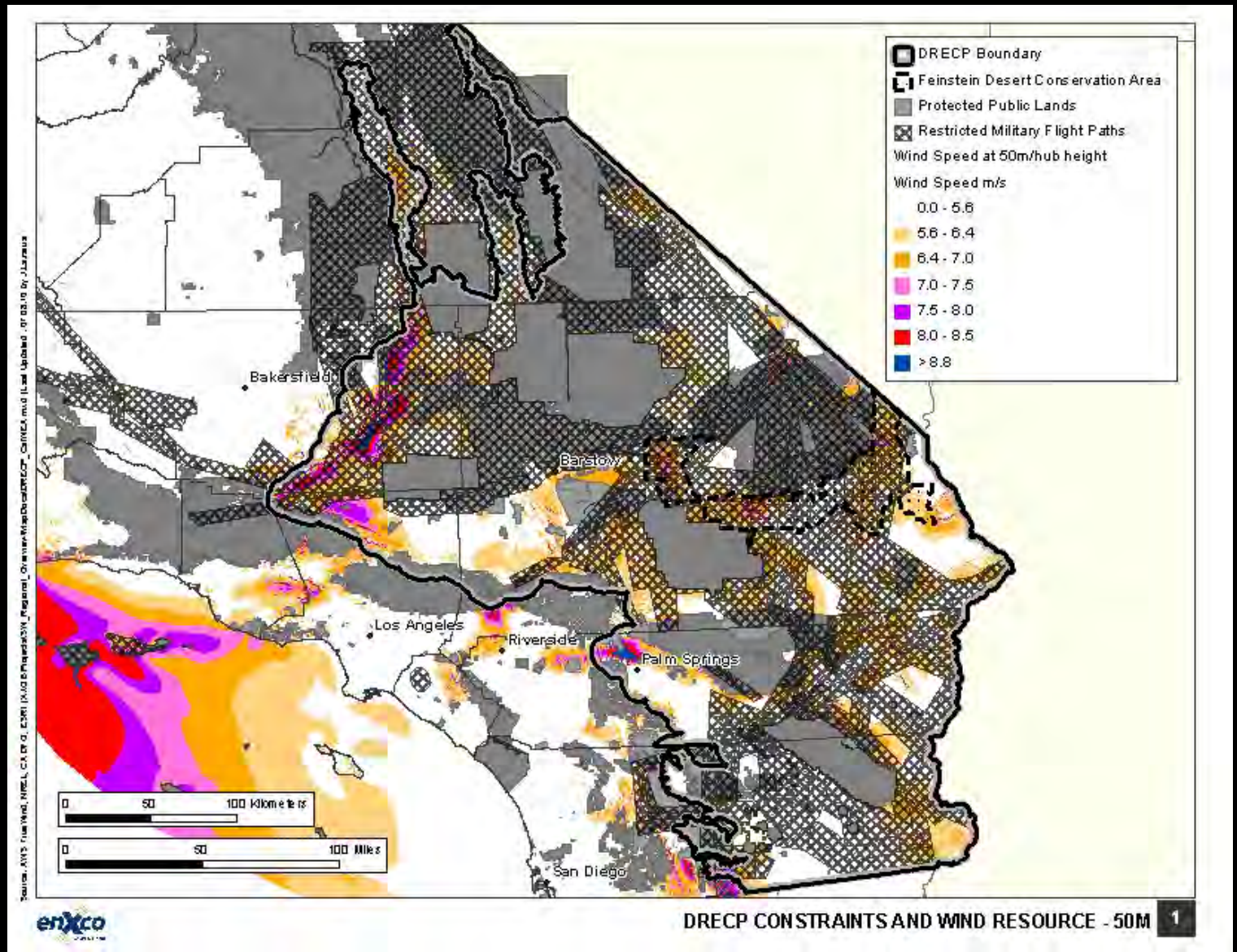
Barriers to Developing Wind Resources

- The potential for wind energy development in the California desert is more limited than for solar development.
- Additional constraints due to military flight paths and radar restrictions

Wind Resources



Department of Defense Flight Paths

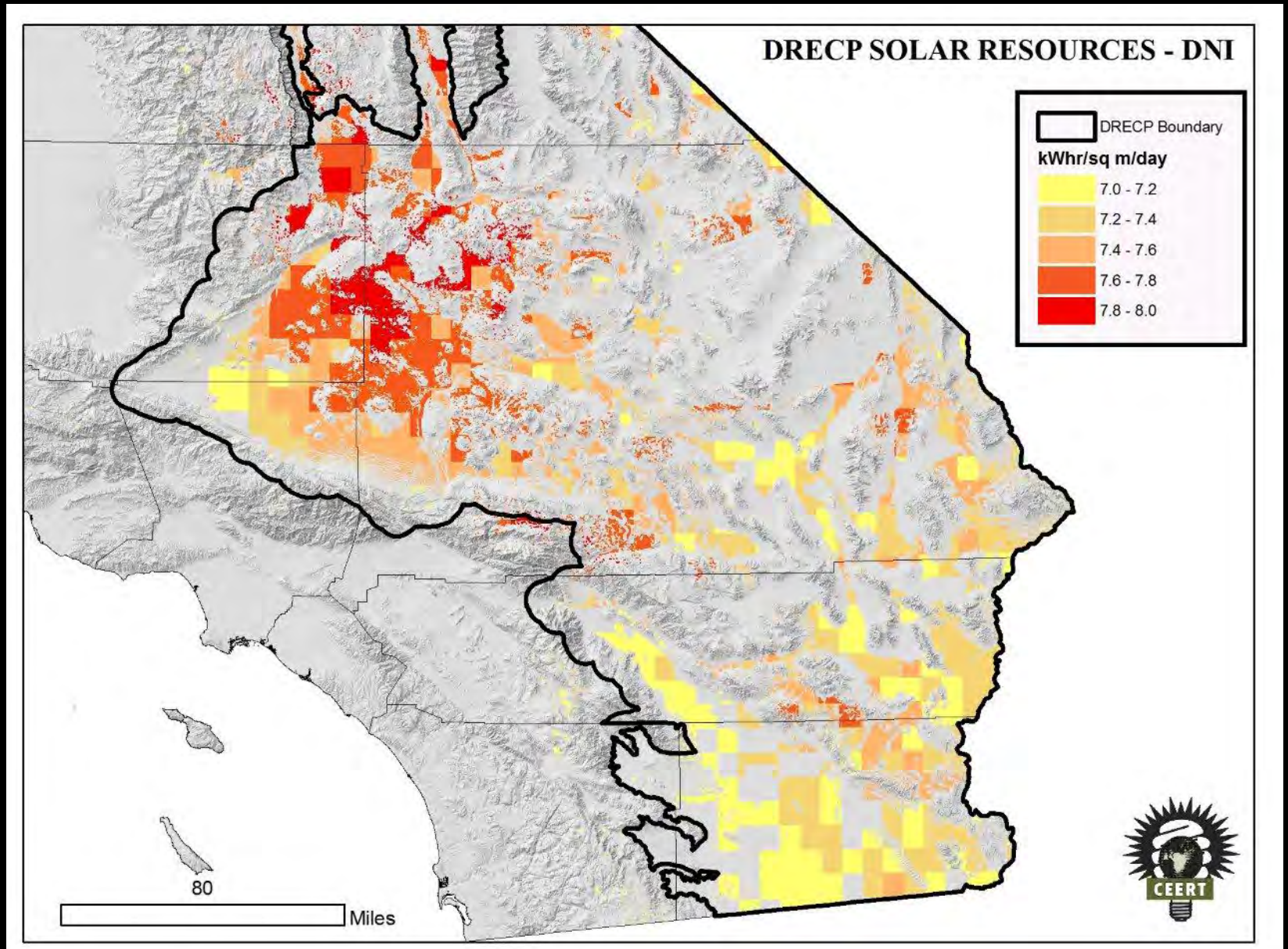


Wind Development Issues

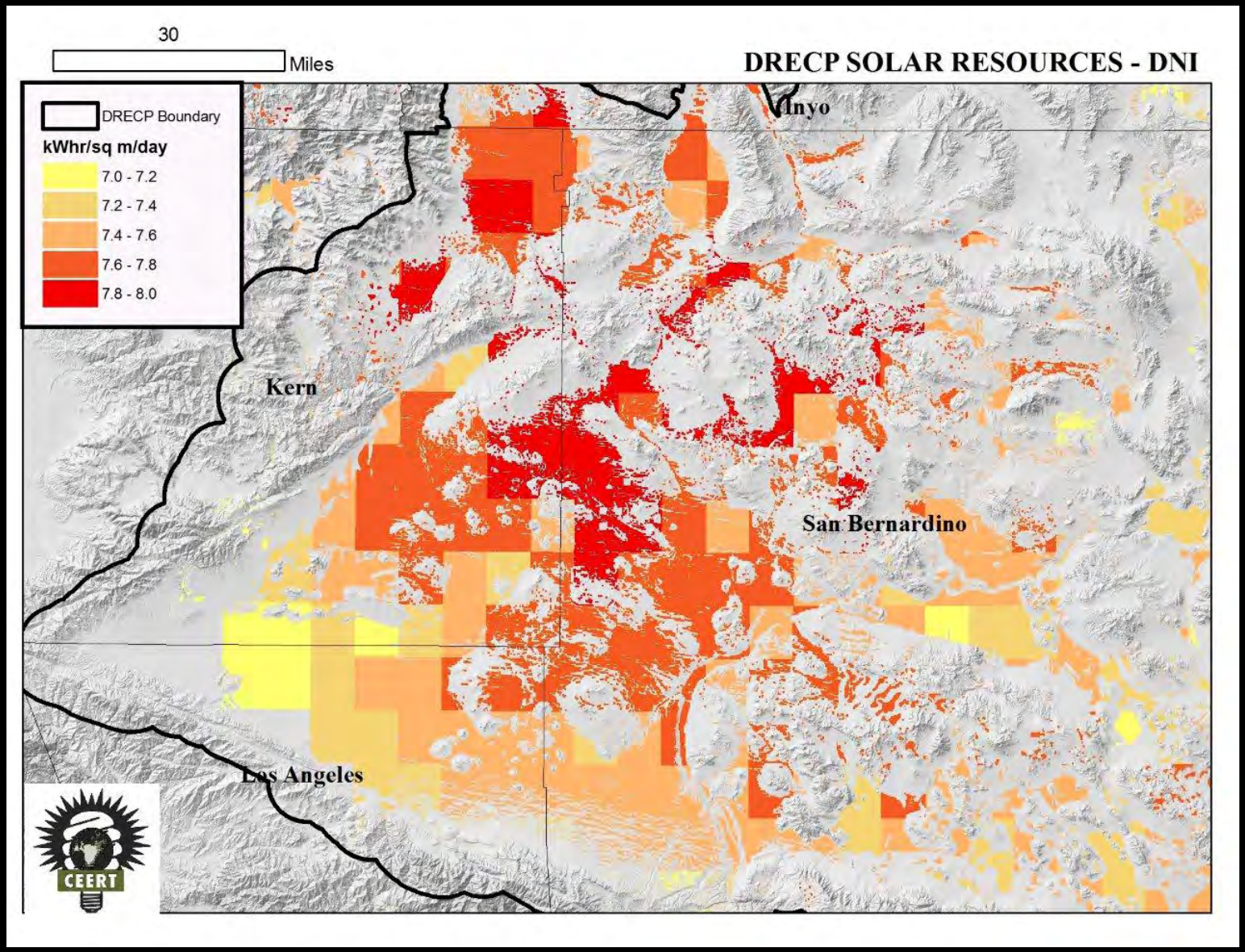
- Modern wind turbines are spread out over the total project area at approximately 1 per 25-40 acres
- Wind projects are compatible with agriculture uses and don't use water
- CEC has adopted voluntary guidelines for pre/post construction avian and bat monitoring
- Kern County is implementing comprehensive avoidance, mitigation, and monitoring for California condor

- Solar Siting
  - Radiation
    - Direct Normal Insolation (kWhr/sq. meters/year)
  - Slope (<5%)
  - Ownership of land
    - BLM
    - Private
    - DOD
  - General Compatibility (Parcels, Land Use, Environmental Concern, proximity to transmission and infrastructure-including water, facility design)

Solar Resources within DRECP

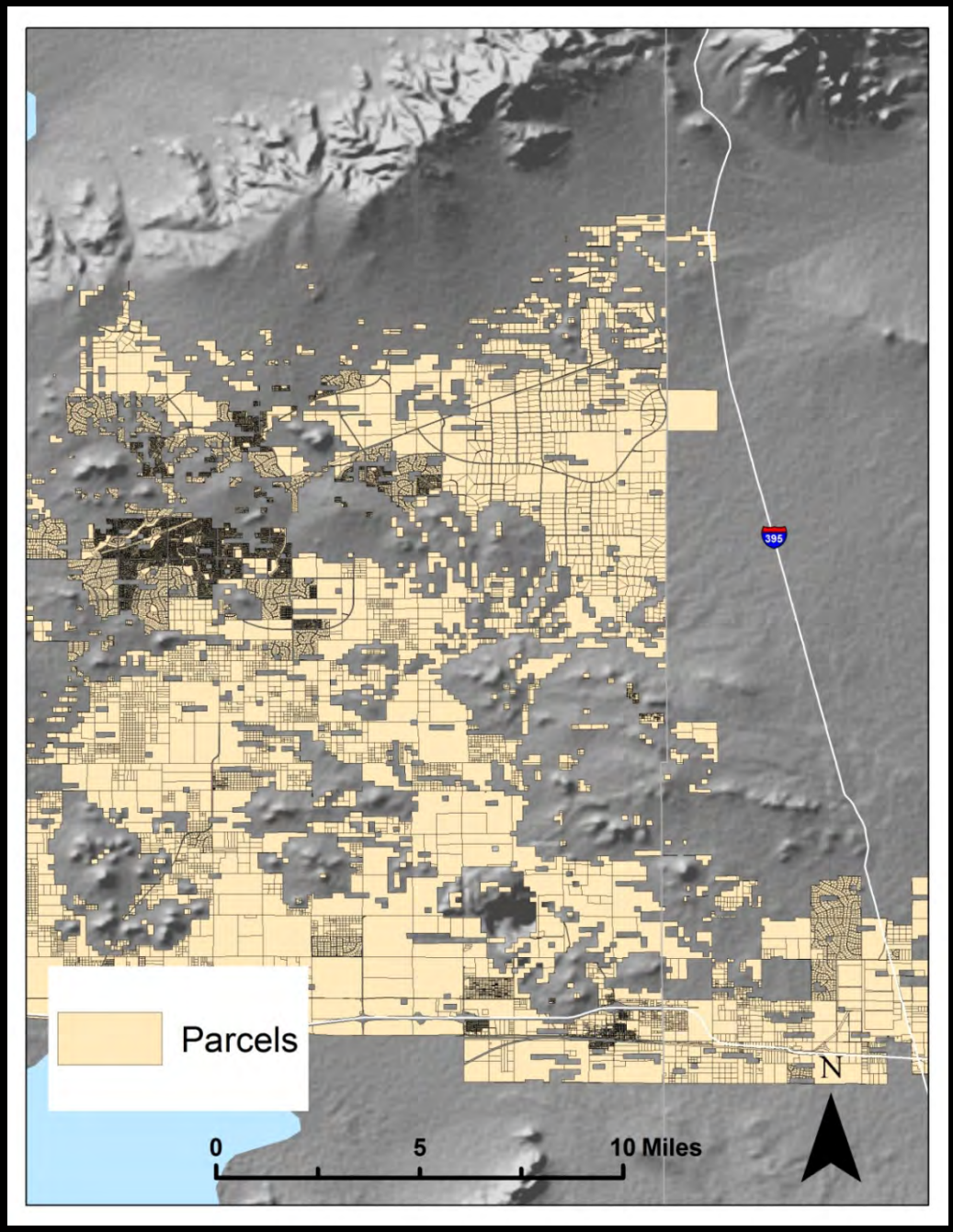


Best Solar Resources in West Mojave

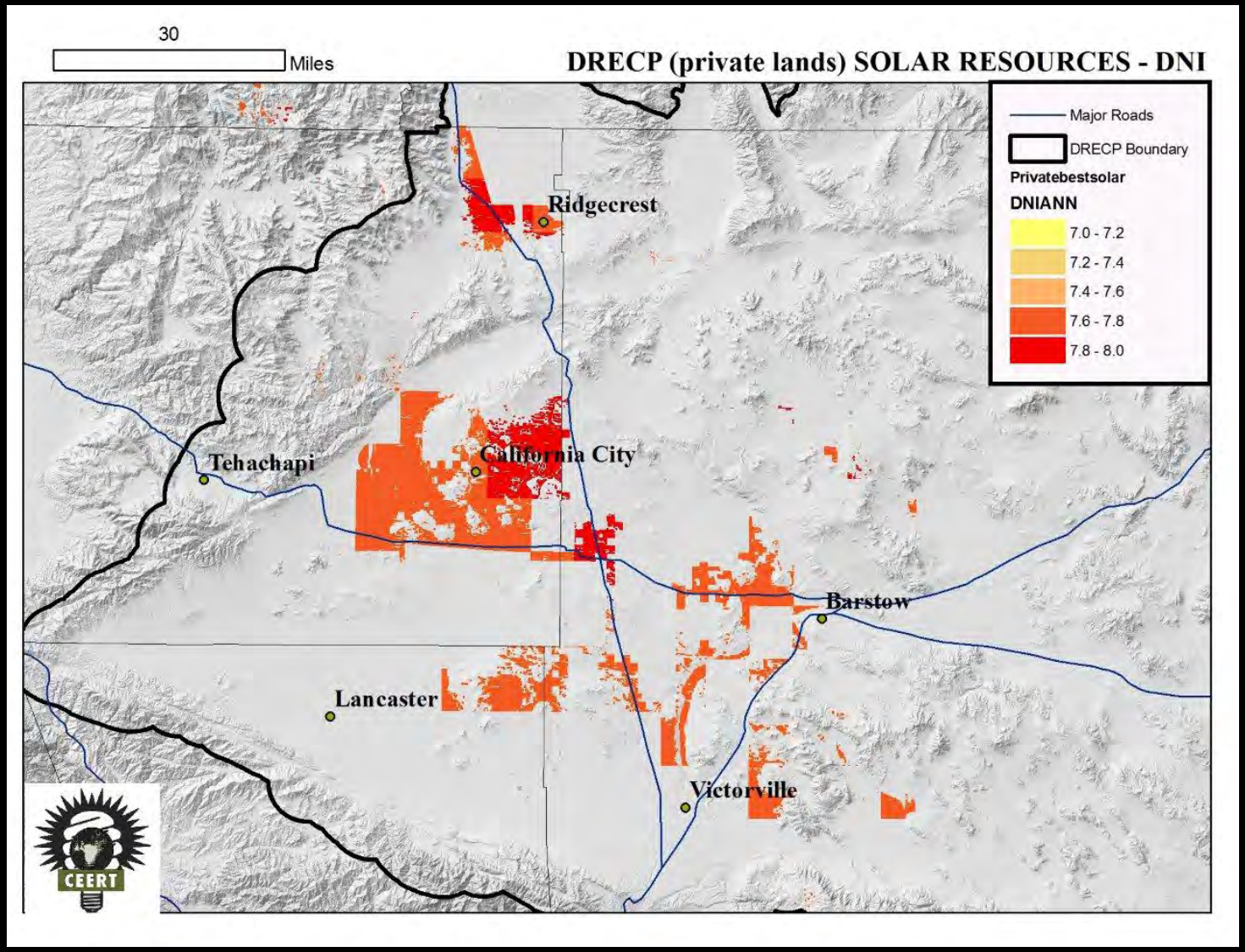


Barriers to Development

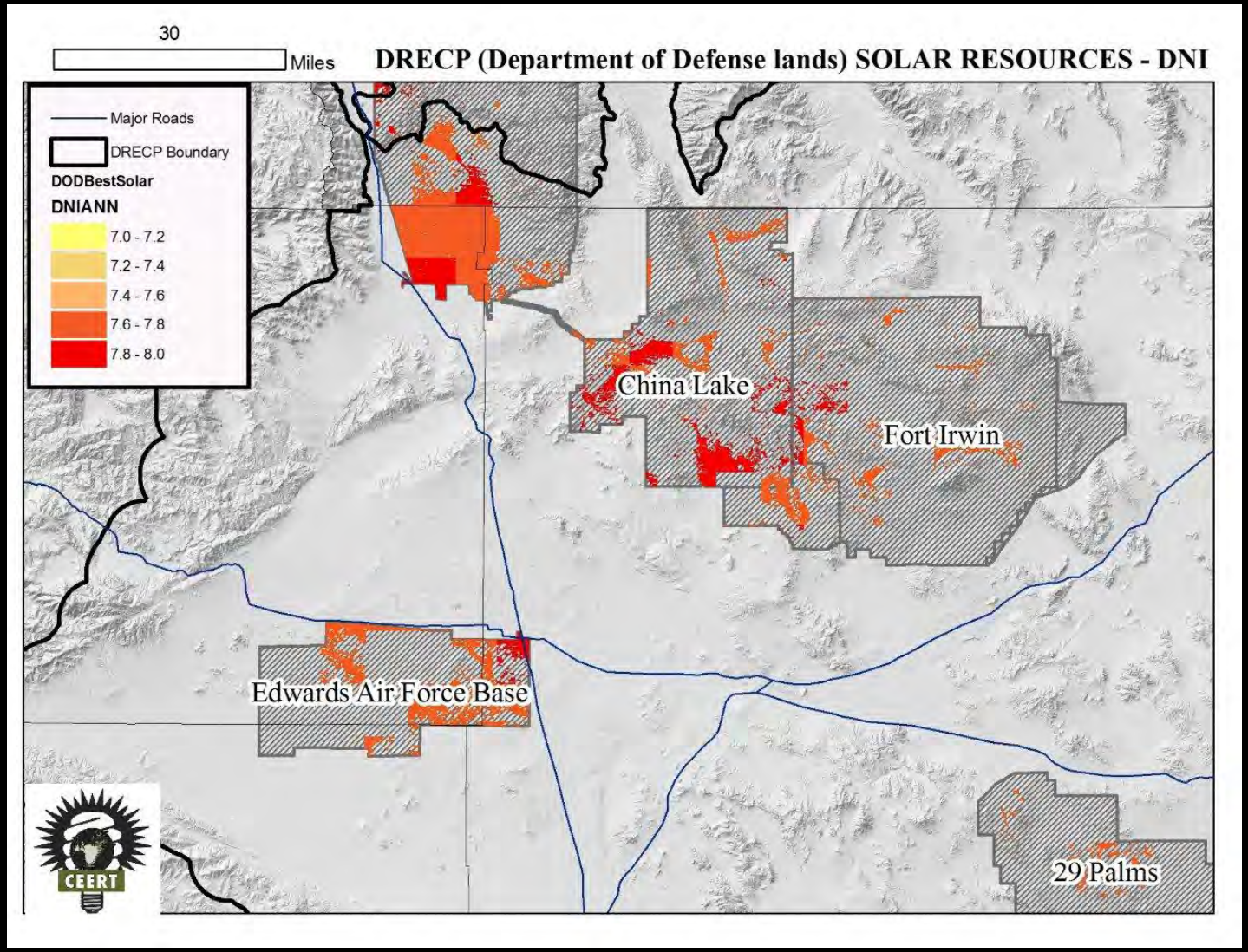
- Private
  - Parcelization
  - Section 7 issue
  - Cost
  - Agricultural Land Conservation (Williamson Act)
- DOD
  - Lack of Process
- BLM
  - Pre-existing uses
  - Process
  - Rent


395
Parcels
N
0
5
10 Miles

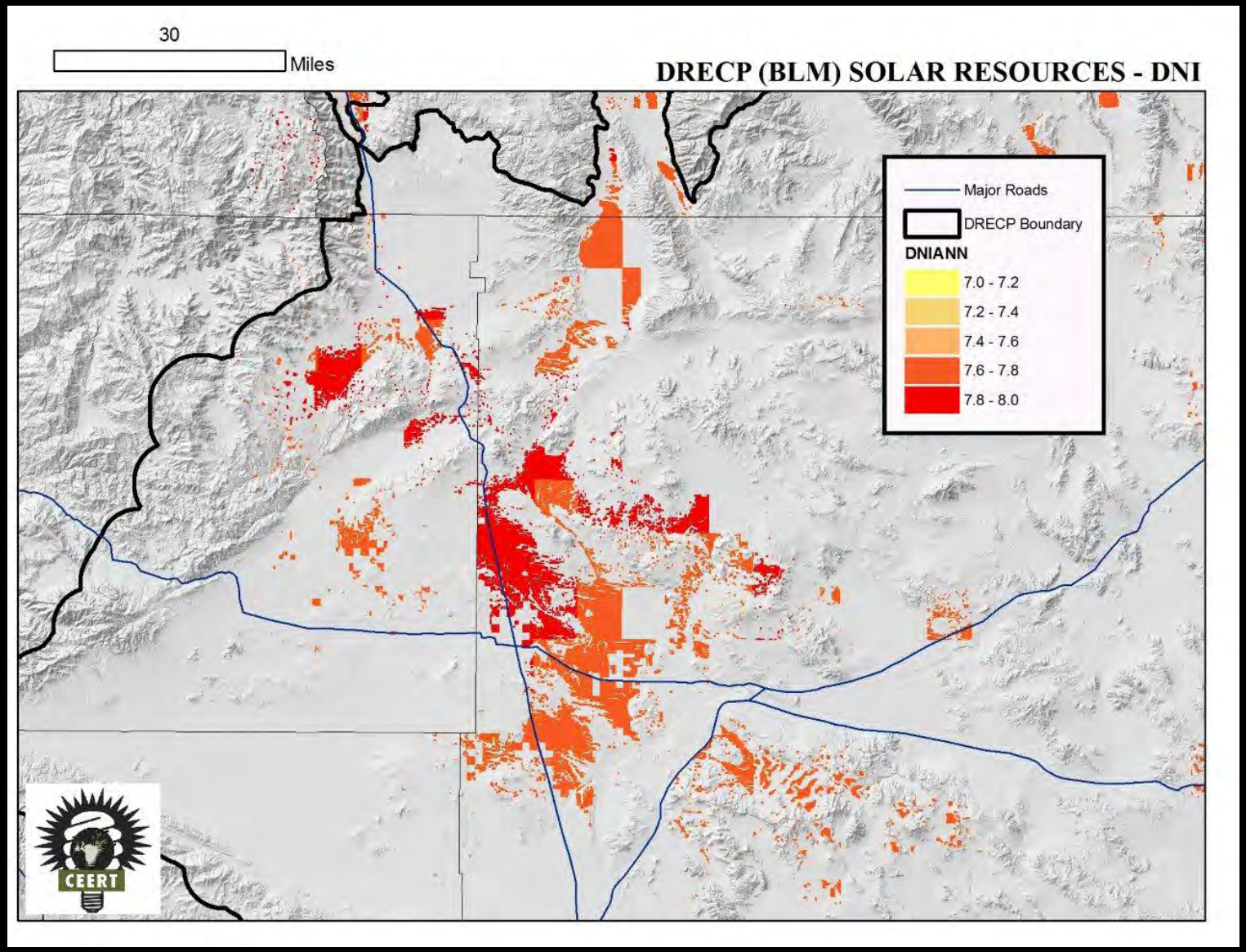
Best Solar Resources on Private Lands



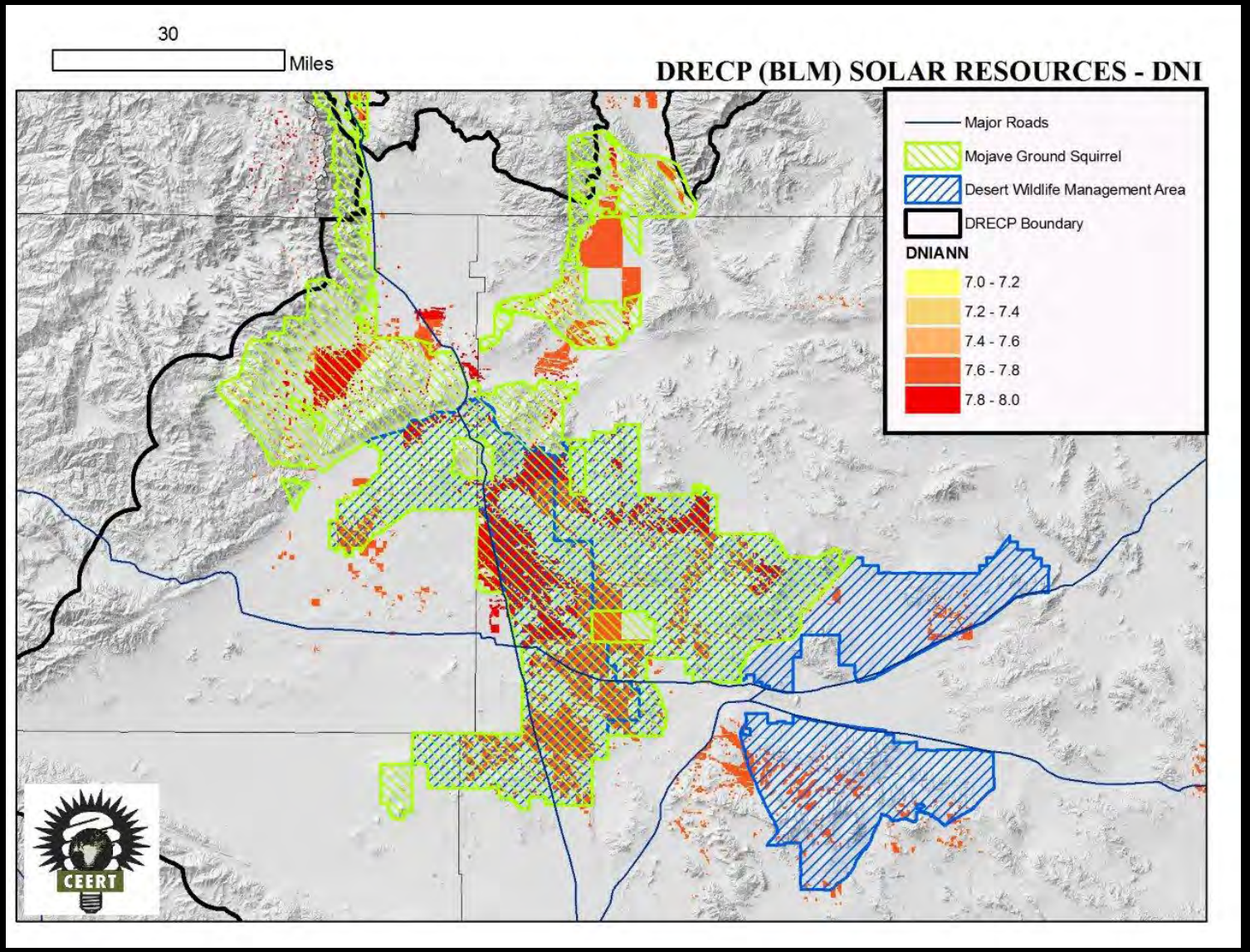
Best Solar Resources on Department of Defense lands



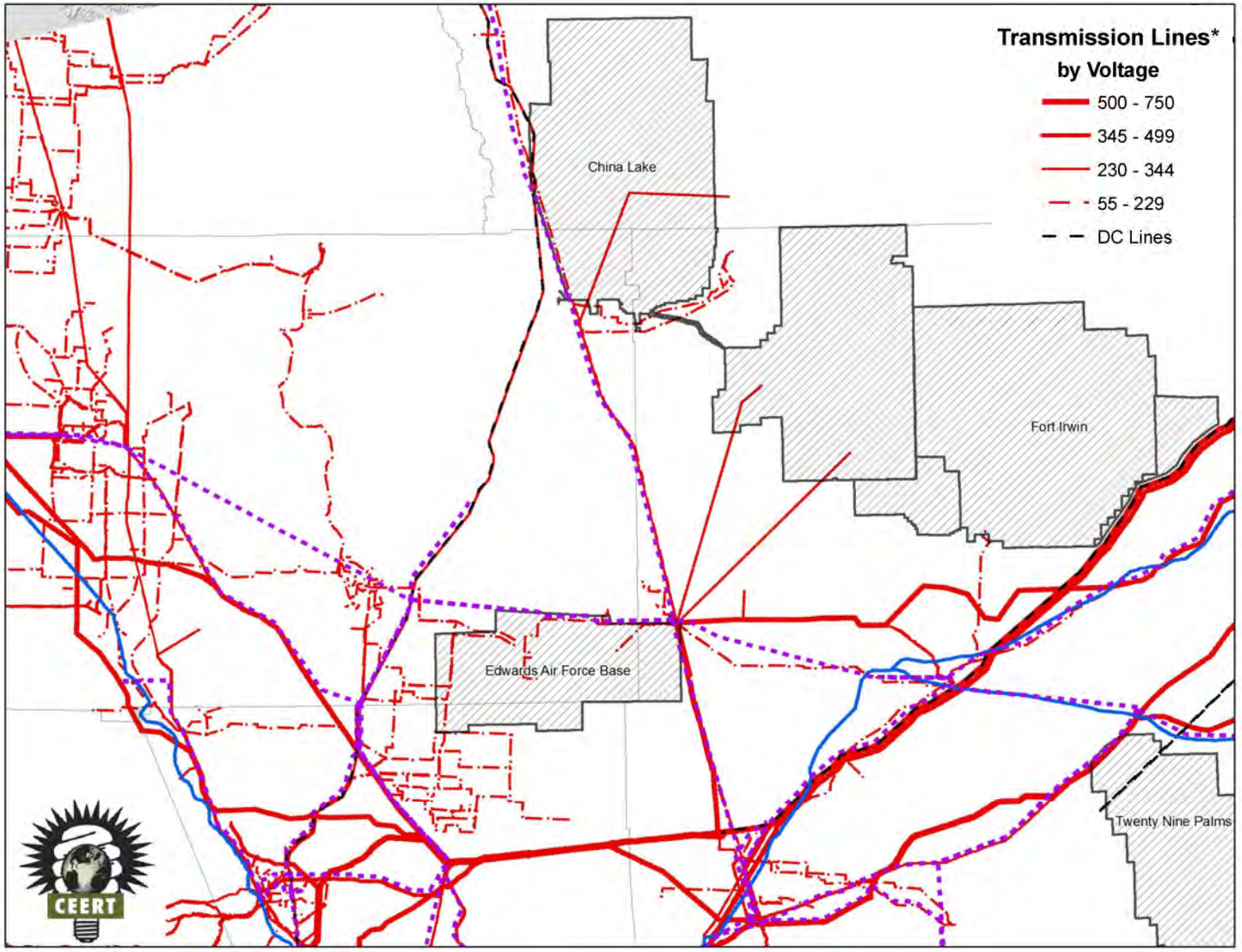
Best Solar Resources on BLM Lands



Constraints on BLM's Solar Resources



Transmission In West Mohave



Land Use in California's Desert Region

Land Use	Acres
Desert Tortoise (Protected)	4.8 Million
Mojave Ground Squirrel (Protected)	1.7 Million
Defense Department	3.3 Million
Off Highway Vehicles	700,000
Renewable Generation (needed for 2020 Goals [33%])	50,000-120,000

Note: Feinstein's Monument would take almost 1.2 million acres "off the table"

Questions

- How can DRECP select the best renewable energy resources and conservation lands to reach state goals?
- In the interim before completion of DRECP, How do we identify and preserve best resource areas and highest priority conservation land?
- How do we address development in the West Mojave?
- How do we allocate the 1% development cap for the Mojave Ground Squirrel Management Area?
- How best to reach agreement on amount of acres needed to meet RPS goals?