



U.S. DEPARTMENT OF
ENERGY

Office of
Indian Energy

Building Economies and EmPOWERing Tribal Communities



Indian Country Solar Energy Potential Estimates & DOE Office of Indian Energy Updates Southwest Solar Forum - December 2011



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Outline

- Clean Energy Resources Estimates
- Updated by DOE Office of Indian Energy/NREL - August 2011
- Key Indian Energy Laws
- DOE Indian Energy Programs
- Key Challenges and Opportunities
- Contact Information



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DOE Office of Indian Energy

- Indian Tribal Energy Development and Self-Determination Act of 2005 (Title V, Energy Policy Act of 2005, PL 109-58)
- Established Office of Indian Energy Policy and Programs (“IE”)
- Amended EPA of 1992
 - New DOE authorities
 - New DOI authorities
 - New Tribal authorities (TERAs)



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Office of Indian Energy Goals

- Promote Indian tribal energy development, efficiency and use
- Reduce or stabilize energy costs
- Enhance and strengthen Indian tribal energy and economic infrastructure relating to natural resource development and electrification
- Bring electrical power and service to Indian land and the homes of tribal members



DOE Office of Indian Energy Programs

EPAct 2005:

- The Director...shall provide, direct, foster, coordinate, and implement energy planning, education, management, conservation, and delivery programs of the Department that
 - promote Indian tribal energy development, efficiency, and use;
 - reduce or stabilize energy costs;
 - enhance and strengthen Indian tribal energy and economic infrastructure relating to natural resource development and electrification; and
 - bring electrical power and service to Indian land and the homes of tribal members located on Indian lands or acquired, constructed, or improved (in whole or in part) with Federal funds.
- Director shall establish programs to assist consenting Indian tribes in meeting energy education, research and development, planning, and management needs.
- The Director shall develop a program to support and implement research projects that provide Indian tribes with opportunities to participate in carbon sequestration practices on Indian land.
- \$20,000,000 authorization for each of fiscal years 2006 through 2016.



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Tribal Funding History - EPAAct DOE Indian Energy Programs

- The IE Director is also authorized to and may provide grants, including formula grants or grants on a competitive basis to eligible tribal entities, which has to date been implemented by DOE's Office of Energy Efficiency & Renewable Energy's Tribal Energy Project (TEP). These grants may be made for use in carrying out –
 - energy, energy efficiency, and energy conservation programs;
 - studies and other activities supporting tribal acquisitions of energy supplies, services, and facilities, including the creation of tribal utilities to assist in securing electricity to promote electrification of homes and businesses on Indian land;
 - planning, construction, development, operation, maintenance, and improvement of tribal electrical generation, transmission, and distribution facilities located on Indian land; and
 - development, construction, and interconnection of electric power transmission facilities located on Indian land with other electric transmission facilities. Sections 2602(b)(2)(A)-(D)
- EPAAct of 1992 - FY 1994 – 2005
 - Total of 124 Projects, \$ 39,767,660
- EPAAct of 2005 – FY 2006 – 2010
 - Total of 64 Projects, \$ 19,394,834
- Total projects funded: 188 Projects, \$ 59,162,494



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EPA 2005 – Authorizations

- DOE Indian Energy Loan Guarantee Program
 - Up to \$2 billion in guarantees authorized
- Federal electricity or energy product purchase preference for Indian energy
 - Not more than prevailing market price
 - Not less than prevailing market terms and conditions
 - Double credit to meet federal agency RPS (§ 203(c)(3))
- PMA Administrators
 - May purchase power from tribes for firming and reserve requirements – but no more than market prices
 - Provide technical assistance to tribes seeking to use transmission system
- Renewable Energy Production Incentives
 - Tribes became eligible for payments (§ 202(b)(1))



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Tribal Leader Priorities for IE

- Expand programs that encourage and fund energy efficiency projects within tribal lands
- Provide technical assistance on technology and energy development as an unbiased expert
- Provide DOE guidance and recommendations for tribal inclusion in transmission development projects
- Design programs with a training focus for tribal technical capacity building on energy development—particularly include financing and best practices in project development
- Increase regulatory interaction of and with local energy co-ops to help build better relationships for energy development collaboration
- Establish a targeted & real-time clearinghouse for federal agencies and tribal governments on energy policies, programs, funding, notices and projects.



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DOE IE -New Program Initiatives

- **Strategic Technical Assistance Response Teams (START) Initiative**

Provide expert development technical assistance directly to tribal leaders and staff

1. Targeted energy development assistance – post feasibility & pre construction/finance
2. Innovative and hybrid solutions to tribal community-scale energy
3. Transmission capacity fatal flaw analysis assistance and interconnection technical assistance

- **Indian Country Energy & Infrastructure Work Group (ICEIWG)**

- Established August 2011
- Composed of Tribal representatives with ownership, operational or mature stage energy development experience– to provide guidance, feedback and expertise to DOE

- **Renewable Project Development and Financing : Tribal Technical Training (Capacity Building) and Best Practices Forums**

- Tribal leader renewable energy development and finance primer series
- Tribal executive workshops on renewable energy financing
- A Primer on Tribal Renewable Energy Financing (inclusion of community scale as well as tribal-specific finance options, e.g., bonding; new markets tax credits)
- Best practices forums planned for 2011-2012 related to energy development and financing in Indian Country



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Strategic Energy Forums

- Solar
- Geothermal
- Transmission and Renewables in the West
- Conventional Energy and Value Chain
- Federal Energy Contracting
- Energy Taxation
- Energy Value Chain
- Institutional Investment

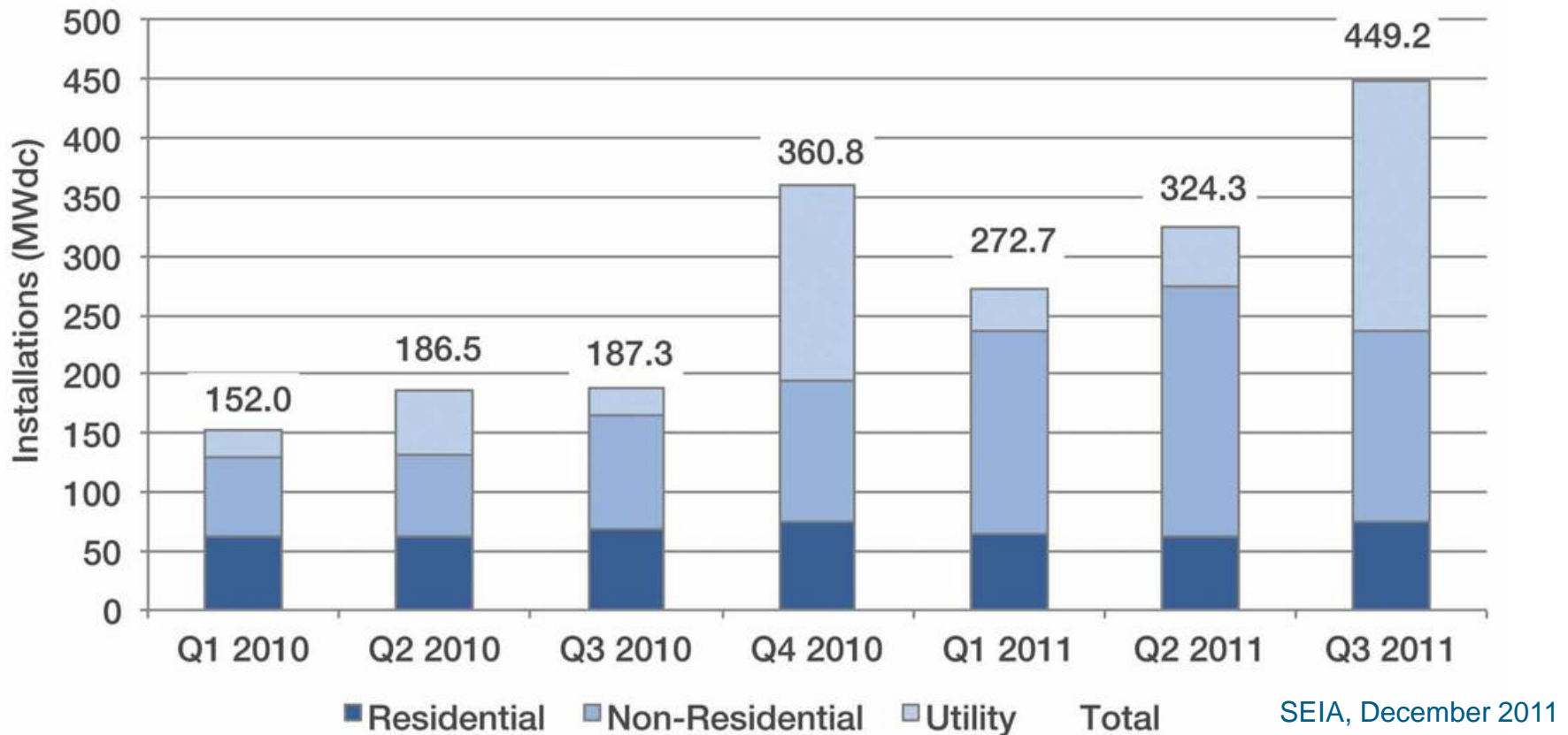


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National Solar Updates

U.S. PV Installations 2010-Q3 2011

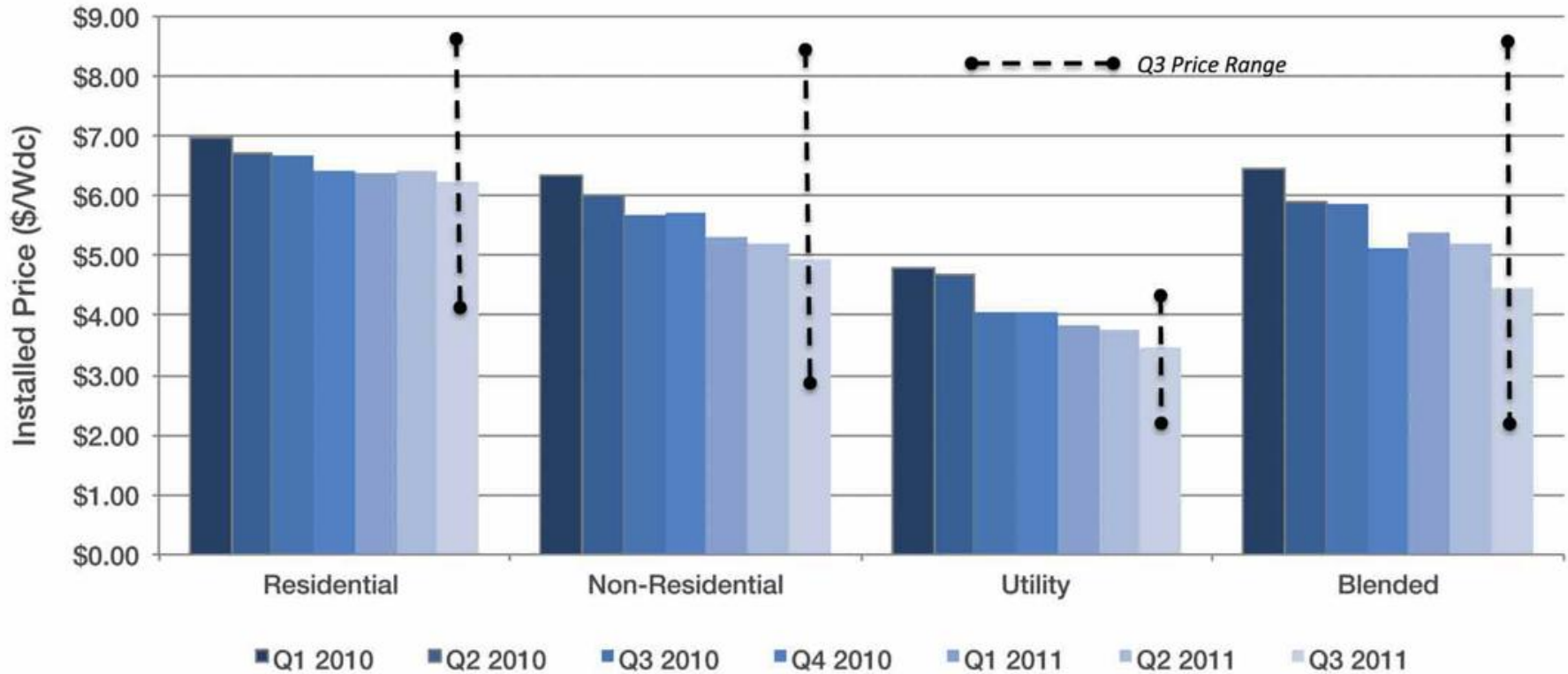


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National Solar Updates

National Weighted Average System Prices, 2010 - Q3 2011



SEIA, December 2011

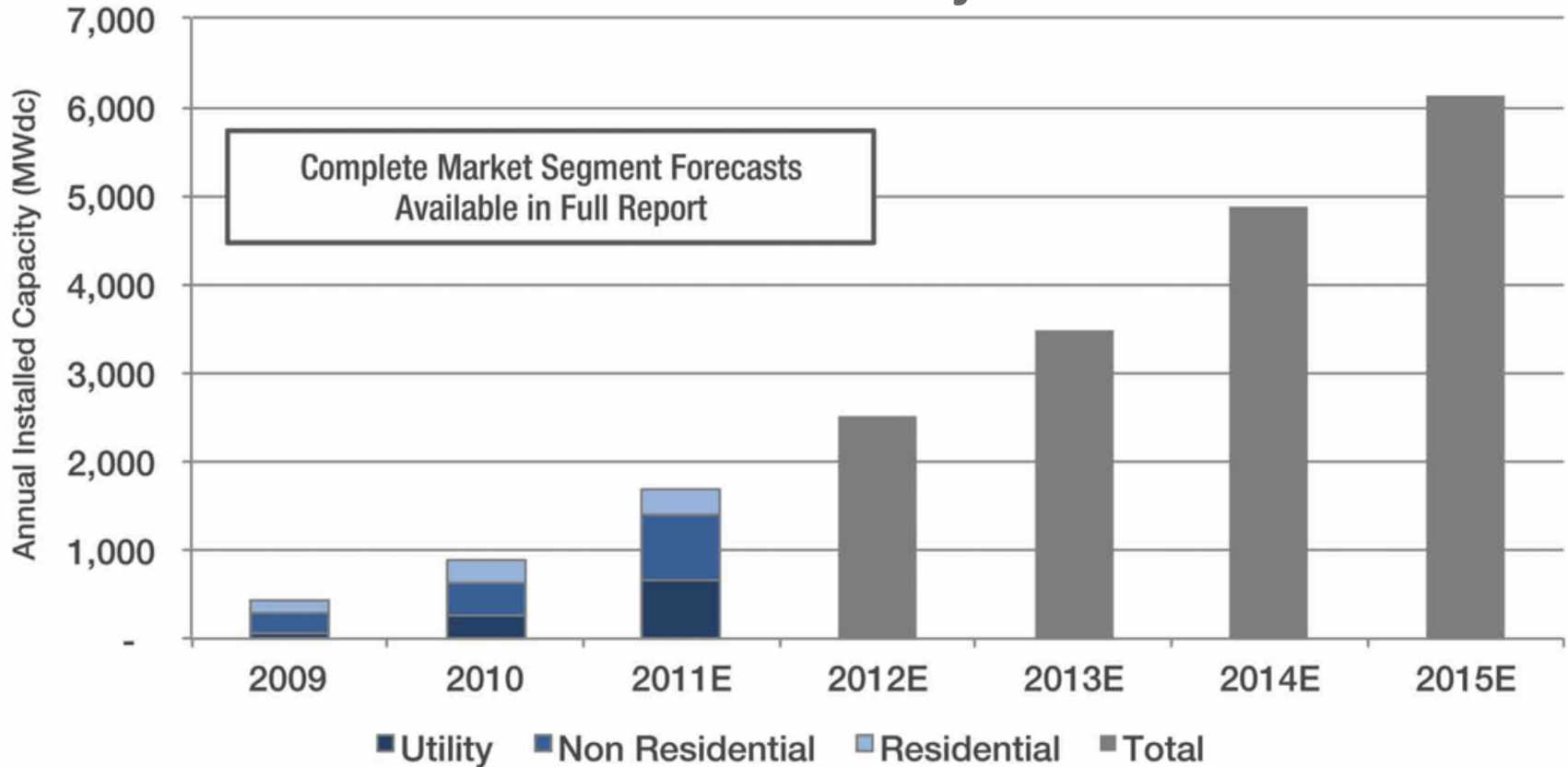


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National Solar Updates

U.S. PV Installations 2009 - Projected Future



SEIA, December 2011



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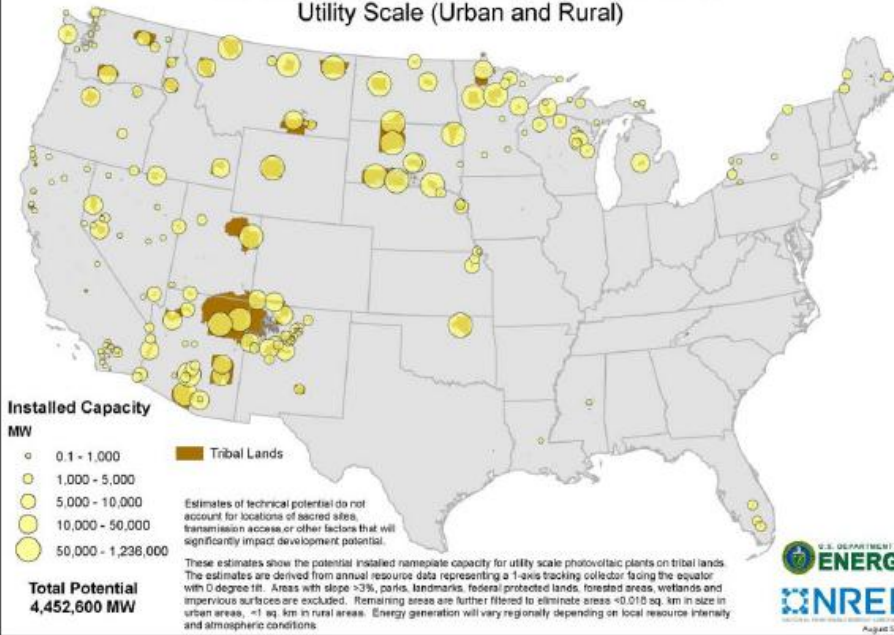
2010 Solar Installations – By State

- Grid Connections in 2010:
 - California 252 MW
 - Nevada 68 MW
 - Arizona 64 MW
 - New Mexico 41 MW
- Total Cumulative Installed:
 - California 1,022 MW (1st)
 - Arizona 110 MW (4th)
 - Nevada 105 MW (5th)
 - New Mexico 43 MW (10th)

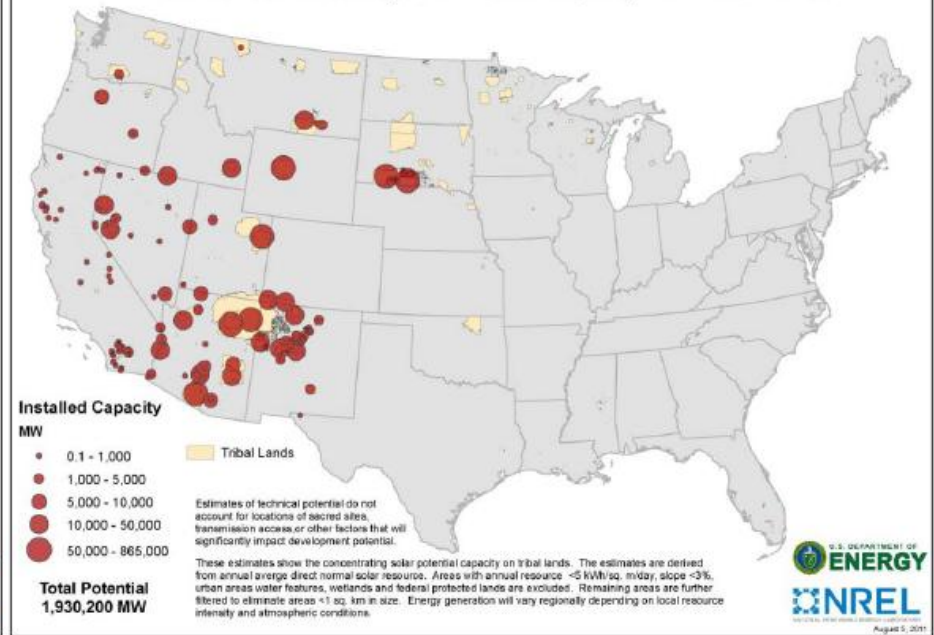


Solar Electric Potential on Tribal Lands could produce ~3 times the Total U.S. Nameplate Capacity (1,121,700 MW in 2009)

Potential Photovoltaic Capacity from Tribal Lands
Utility Scale (Urban and Rural)



Potential Concentrating Solar Power Capacity from Tribal Lands



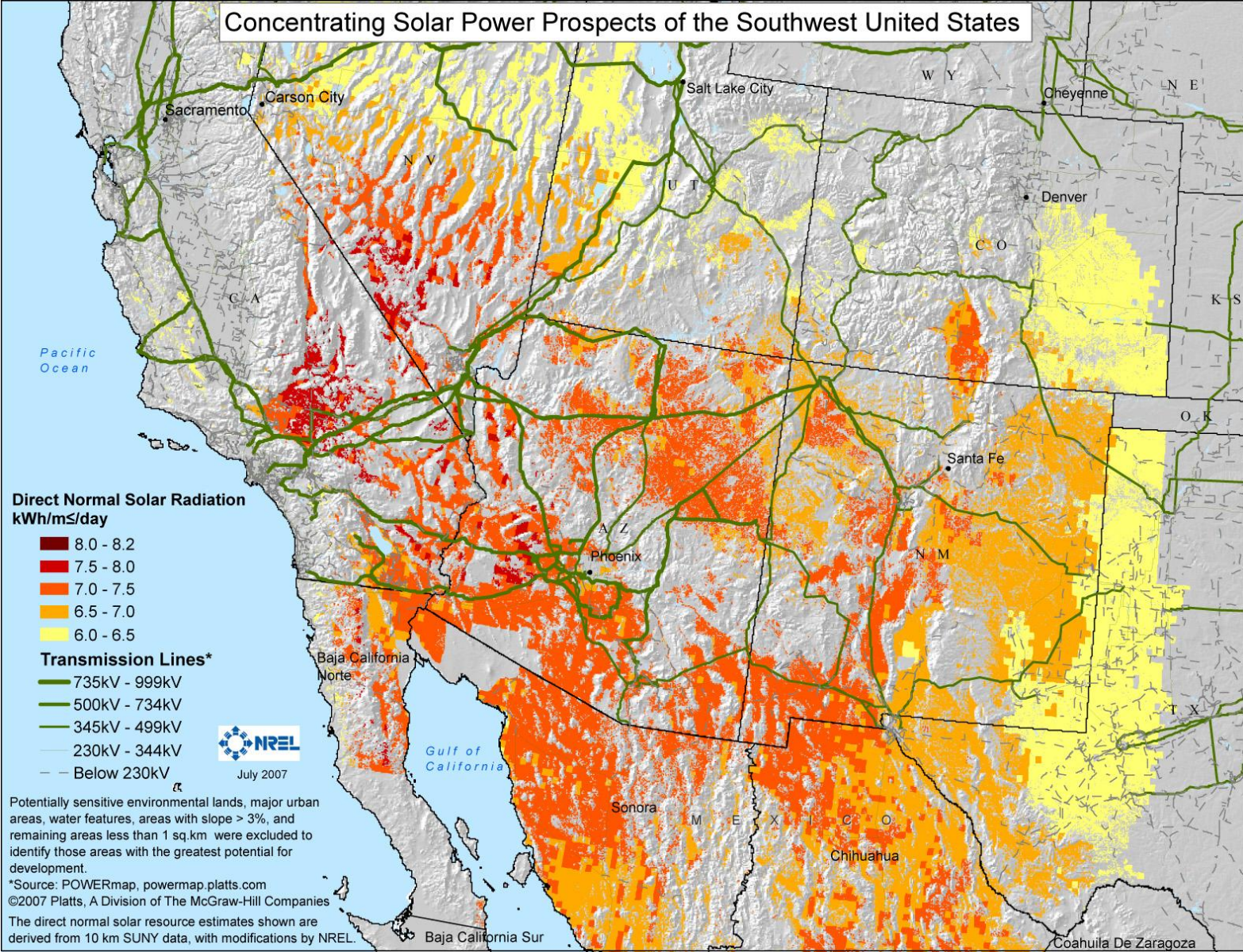
Solar Electric Potential Capacity of 4.5 Million MW on Indian Lands (PV) or 2 Million MW (CSP)



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Concentrating Solar Power Prospects of the Southwest United States



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Solar Potential – Southwest Tribes

- California Tribes
- Arizona Tribes
- Nevada Tribes
- New Mexico Tribes



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