The Renewable Energy Footprint

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Problem

- Terrestrial renewable energy development is highly land intensive

- The Nature Conservancy predicts –
  - Over *150 million acres* may be consumed in the U.S. to meet demand for electricity and fuel over the next 25 years with increased renewable energy production

- How can we use law and policy to minimize "trade-offs" between *land conservation* and *renewable energy* in the shift away from fossil fuels?

Argument / Conclusions

- The renewable energy footprint is a problem that law needs to engage

- *Existing* regimes for energy land use not only fail to address cumulative impacts but are inadequate to do so
  - how the law treats energy land use matters on more than just a local scale
  - how state and fed incentives promote particular energy resources has direct land use implications

- Land impacts should be a central consideration in development and implementation of energy policy

Photovoltaic Solar Arrays

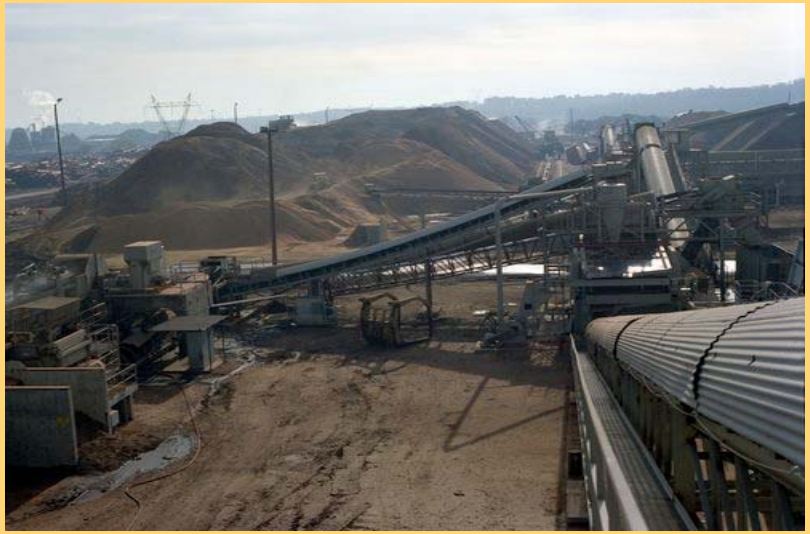
(Source: NREL Photographic Information Exchange)

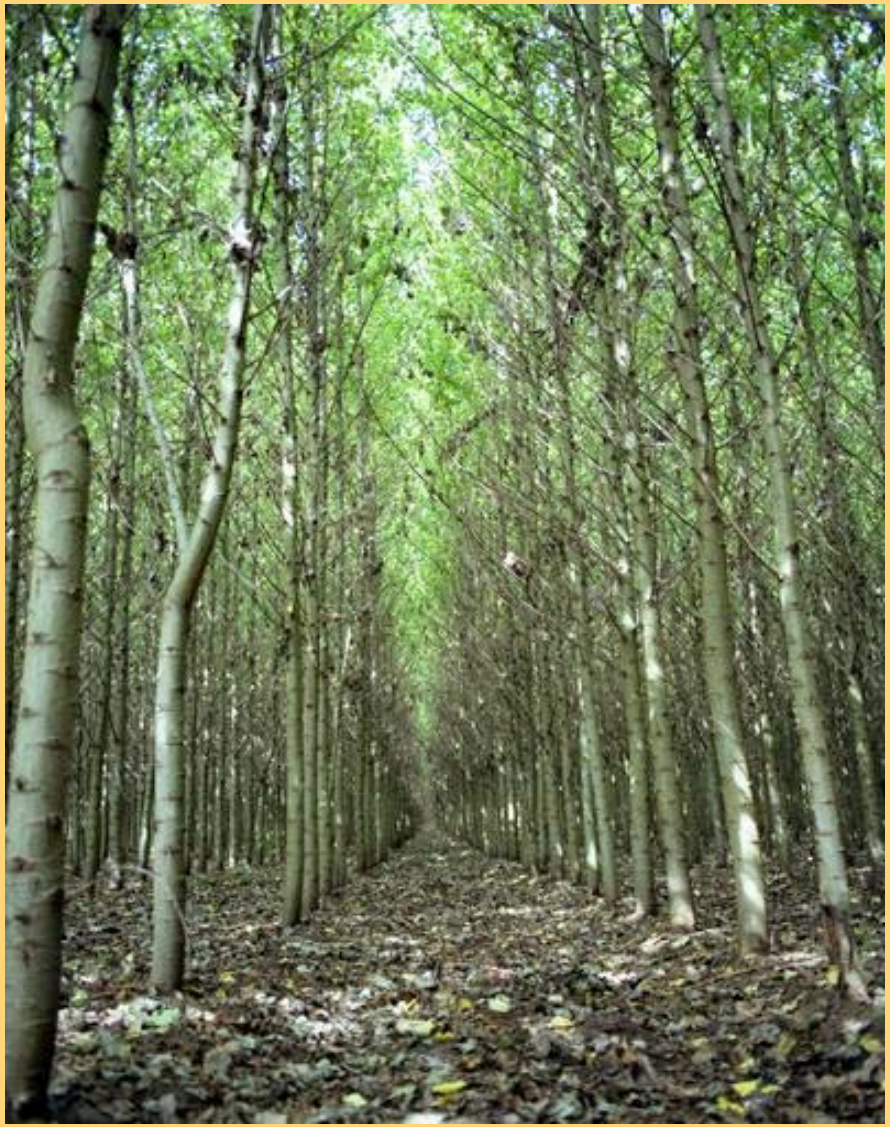
Wind Farms

(Source: NREL Photographic Information Exchange)

Biomass

(Source: NREL Photographic Information Exchange)





Energy Sprawl by Resource

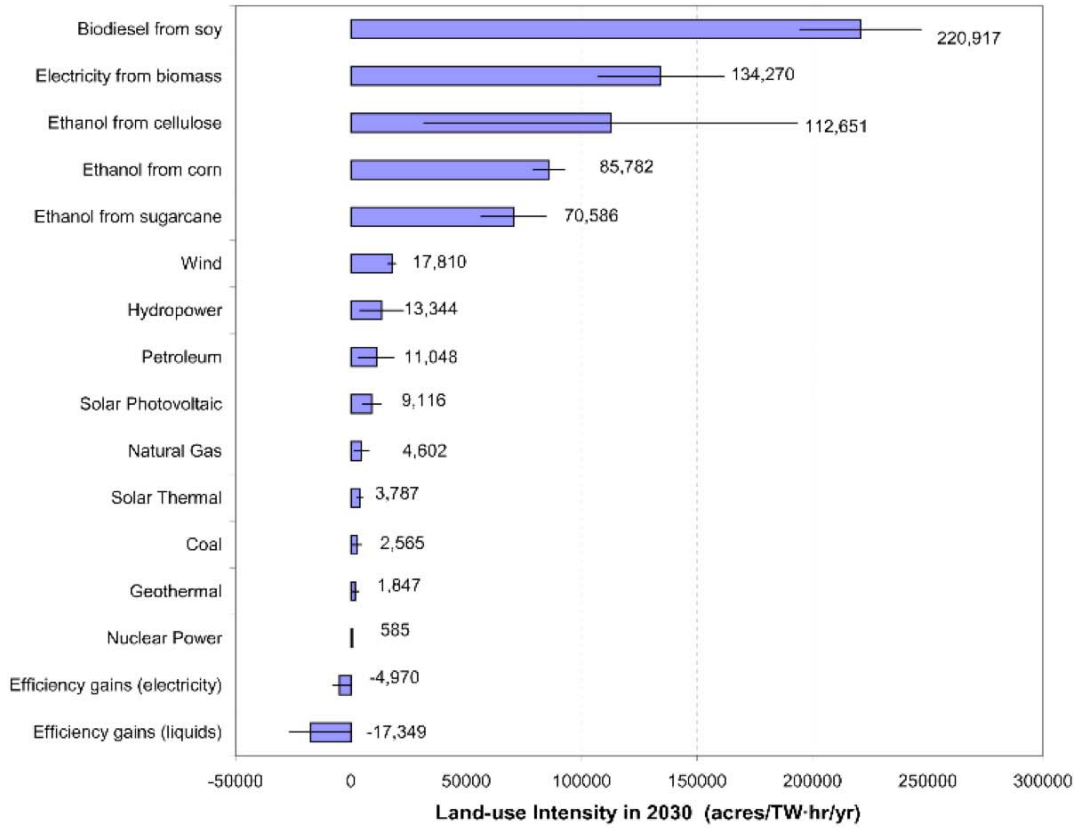
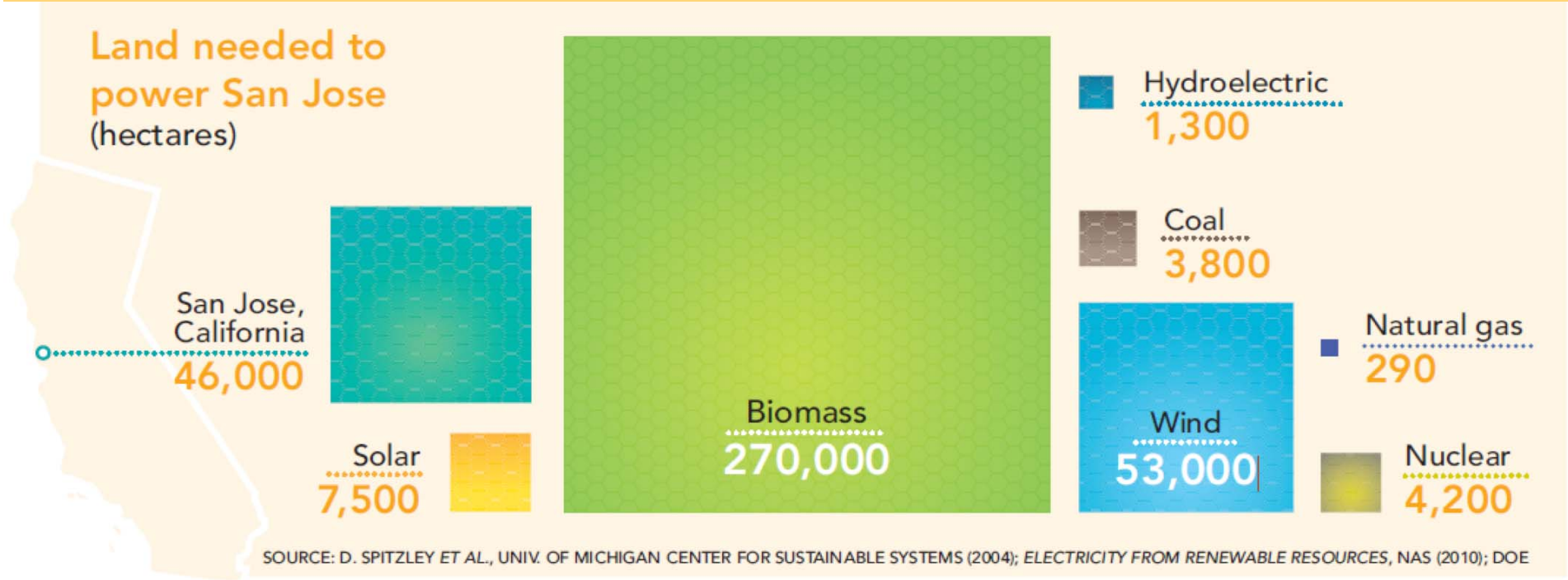


Figure 1. Land-use intensity for energy production/conservation techniques in 2030, as measured in acres of impacted area in 2030 per terawatt-hour of energy produced/conserved in that year. Error bars on the graph show the lower and upper bound of plausible current and future levels of land-use intensity. Numbers provided are the midpoint between the high and low estimates for different techniques, and represent commercial production of energy rather than end-use generation, which often has lower land-use intensity.

Robert McDonald, et. al., *Energy Sprawl or Energy Efficiency: Climate Policy Impacts on Natural Habitat for the United States of America*. PLoS One 4(8): e6802 (2009)

From *Science*:
"Scaling Up Alternative Energy"
(Aug. 13, 2010)



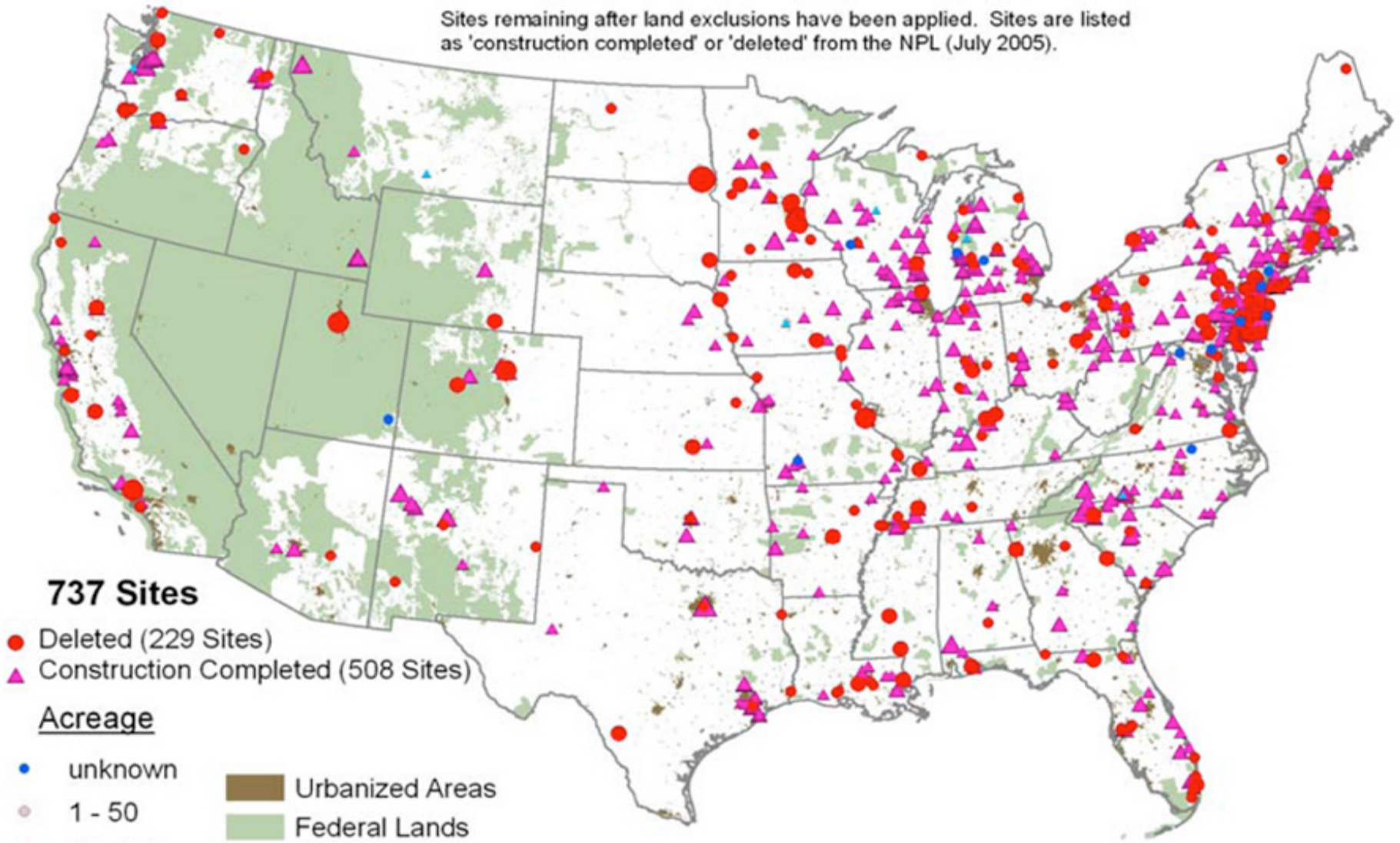
www.sciencemag.org

Policy Objectives to Minimize the Footprint

1. Avoid New Infrastructure
2. Reuse Land
3. Maximize Onsite and Small-Scale Potential
4. Identify Least-Harm Sites and Strengthen Mitigation
5. Better Coordinate Transmission Planning and Renewable Energy Policy

Potential Limbo Land Sites for Consideration for Renewable Energy Technology Redevelopment

Sites remaining after land exclusions have been applied. Sites are listed as 'construction completed' or 'deleted' from the NPL (July 2005).



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"The Renewable Energy Footprint" is forthcoming in the Stanford Environmental Law Journal (spring 2011); a draft version has been posted to SSRN (public availability pending).