

Power Under The Hot Sun – Engineering Works

Blythe Solar Power Project

Team 1 - The Wrecking Crew

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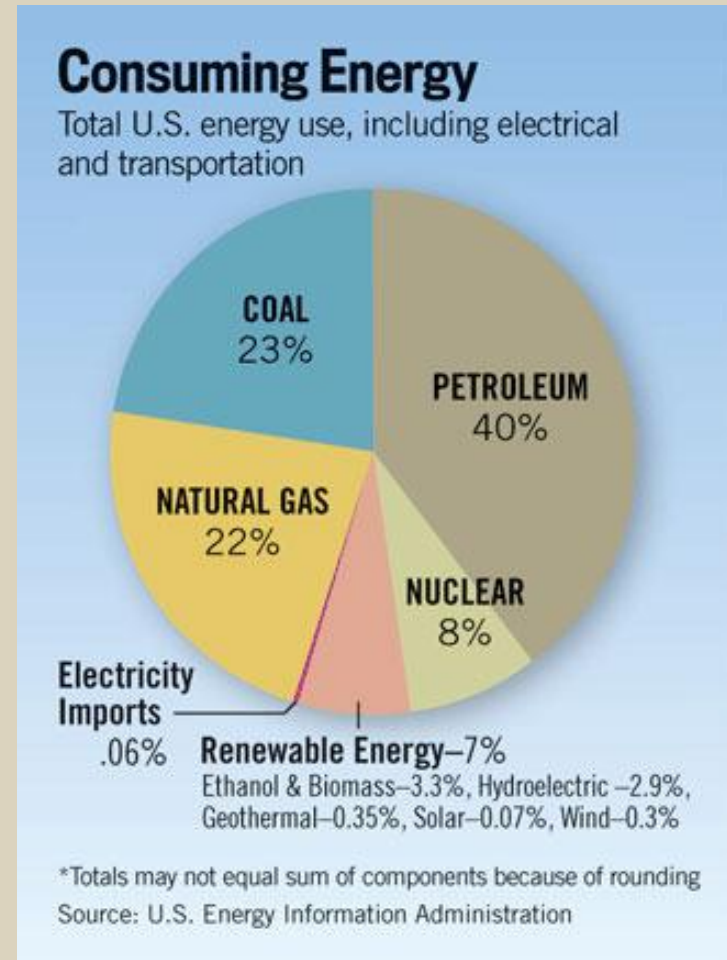
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MEEN 489-501

February 1, 2011

Justification

- Diversify sources of energy
- Jobs
 - 2,000 construction jobs
 - 250 permanent jobs
- Cleaner energy
- More independent



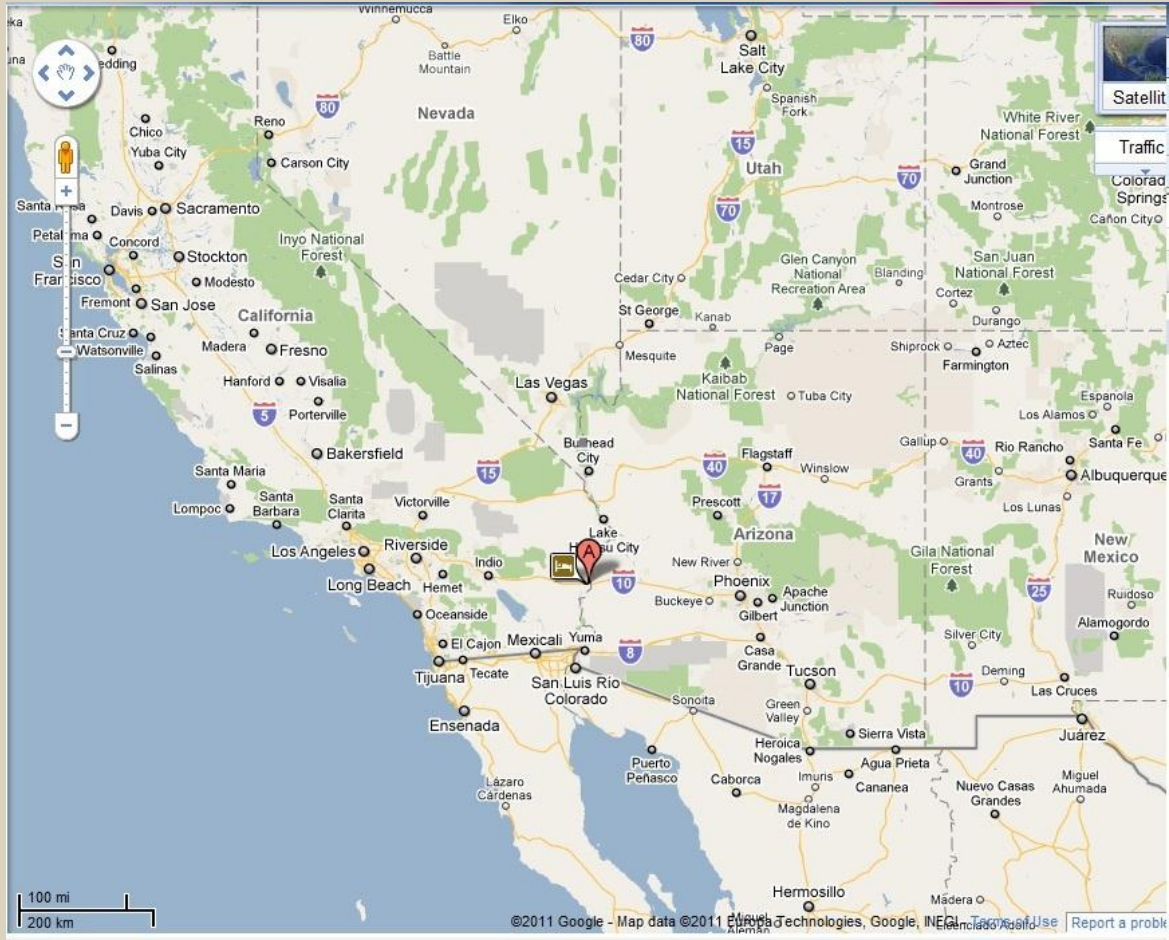
Overview

- Introduction
- Location
- How it Works
- What is 1,000 MW?
- Costs
- Summary
- Is it Worth it?
- Going Forward
- Questions or Comments
- References

Blythe Solar Power Project

- Chevron Energy Solutions and Solar Millennium, LLC
- \$6 Billion Cost, 7000 acres of public land in South California
- Parabolic trough power generation
- Four solar plants with 250 megawatt nominal capacity each

Location



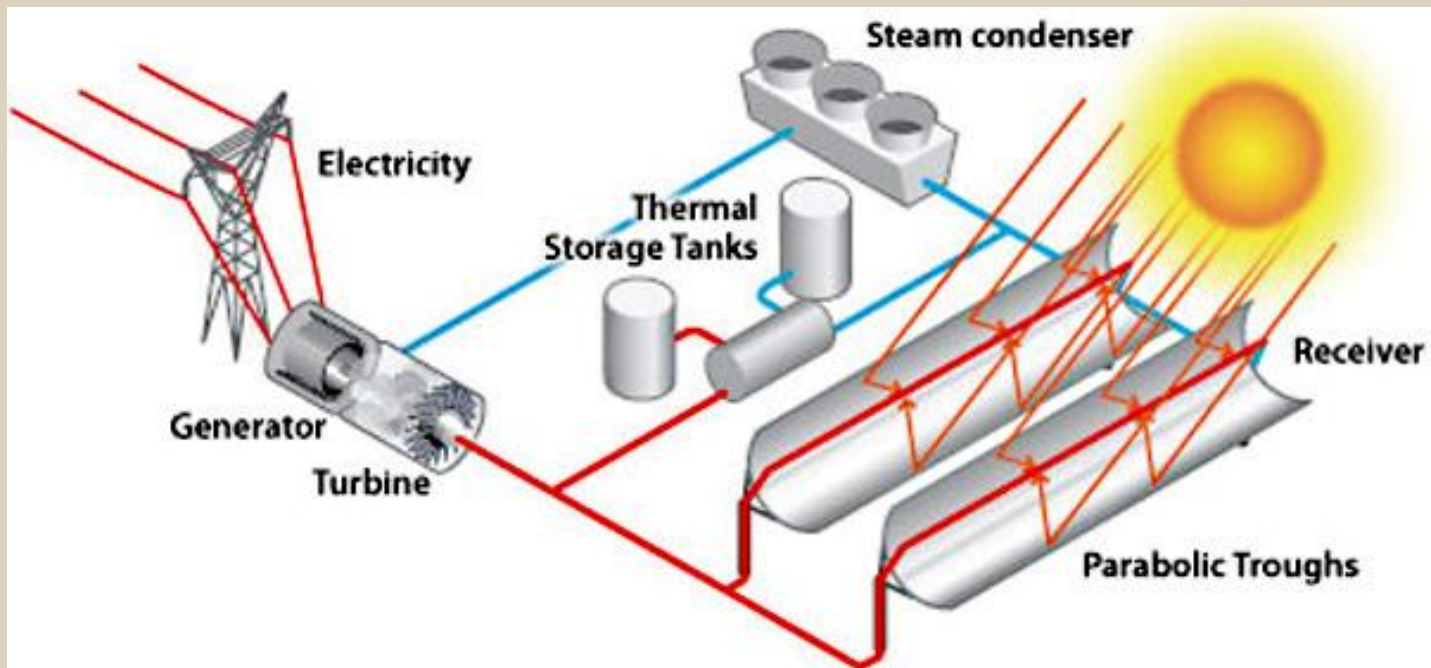
Parabolic Trough Technology

- Sunlight reflected from parabolic mirror on to glass tube
- Heat transfer fluid heated to 700 °F
- Hot fluid heats water to create steam
- Steam powers turbine generator



Energy Storage and Hybridization

- Stored hot fluid storage tanks power turbines
- Use same turbine generators as fossil fuel power plants
 - Can combine solar and fossil



What is 1,000 MW?

- 1 MW of power can supply approximately 250 to 300 households per year
- ~ 80% capacity during winter



Financial

- Costs \$6 billion including government write offs
- ~ 2,000 construction jobs
- ~ 250 permanent jobs



Electricity Costs

- “Green” energy assumed higher costs
- For Concentrated Solar Power (CSP) estimated
 - \$0.12/kWh in 2006
 - \$0.085/kWh by 2010
 - \$0.06/kWh by 2015



Summary

- Largest solar plant in the world
 - 1,000 MW capacity, doubles US output
- Parabolic trough technology
 - Store energy, fossil plant hybrid
- \$6 billion cost
 - ~ 2,000 construction jobs
 - ~ 250 permanent jobs

Is it Worth it?

- Difficult to determine economic outlook
 - Government incentives
 - Solar technology improvements
 - Energy prices
 - Politics, politics, politics...



Going Forward

- Plant operational in 2013 and fully operational in 2016
 - Provide power to 300,000 homes
 - 4.2% of nations electricity by 2020 will come from solar energy
- Developers to raise \$100 billion for solar plants
 - Output increase to 44,000 MW by 2020

Questions or Comments?

"Al Gore announced he is finishing up a new book about global warming and the environment. Yeah, the first chapter talks about how you shouldn't chop down trees to make a book that no one will read." -- Conan O'Brien

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