Maggie Clark
Interim Director of Government Affairs
Asked to Address Three Topics:

• Information on current decommissioning processes

• How solar decommissioning is set out in contracts
  – See handout

• Quality control of solar panels manufactured by suppliers
County specifically addresses solar development in zoning code

Data as of 8/2015
NC Template Solar Ordinance (2013) – Working Group Participants

Not pictured: NC Solar Industry Representatives
End of Term. Upon the expiration or earlier termination of the Term, Tenant shall remove Tenant’s Property, **vacate the Premises and restore the Premises to substantially the condition in which it existed as of the Rent Commencement Date**, subject to any alterations that are unrelated to Tenant’s use or occupancy of the Premises and any clearing and grubbing of the Premises; provided, that upon at least ninety (90) days’ advance written request by Landlord to Tenant, Tenant shall not remove those electrical lines and connections identified by Landlord.

The removal of Tenant’s Property and restoration of the Premises shall be completed in a manner that does not unreasonably and adversely affect the suitability of the Premises for farming purposes. If Tenant fails to vacate the Premises in accordance with this Section 12, Landlord shall be entitled to holdover rent in the amount equal to one hundred twenty-five percent (125%) of Rent for the final year of the Term, prorated on a daily basis, for each day that Tenant fails to so vacate the Premises.

Note: “Tenant” = solar developer; “Landlord” = landowner
Quality Control

• “Bankability Guidelines”
  – Longevity and performance of modules are critical to financial partners to realize their anticipated equity returns

• Tier classification system
  – FLS Energy only uses Tier 1 panels
    • Multiple engineering reports and third party vetting sources are used to verify module quality
    • Standard 20-year warranty for quality and performance
    • Banks that finance these projects are meticulous in scrutiny of financial and quality control

Courtesy of Frank Marshall, FLS Energy
History of Leadership in Cost, Scale, and Sustainability

1999: Acquired EPC & project DEV
2005: Financed ~11B solar plants
2007: World’s largest PV plants
2008: Industry leading tracker technology
2009: Proprietary plant controller
2010: State-of-the-art Operations Center
2011: World record 18.2% module
2012: First global module recycling program
2013: 1st to break $1/watt cost barrier
2014: 1st to produce 1GW in single year
2015: TetraSun acquired disruptive x-Si technology

World record 21.5% cell
World record 18.2% module
Integrating into the global energy mix
State-of-the-art recycling technology and business model

- Technology based on crushing panels with shredder-hammermill and leaching with sulfuric acid and peroxide
- High yield (~90%) recovery of glass and semiconductor material for reuse in new glass and PV products and can process ~26,000 metric tons per year
- Continuously improving processes and technology and reducing operational costs
- Cost-effective contracts with 2-year termed renewable pricing and no up-front fees: “pay as you go” model using later year project cash flows
- Easily integrated into O&M, EPC, PV power plant and module sales agreements
- Increased volumes and rising disposal costs will lead to recycling becoming a commercially attractive business
Product Safety and Durability of Thin Film CdTe PV

• CdTe is not Cd. CdTe is a highly stable semiconductor compound encapsulated in two layers of glass.
• There is very little CdTe in a PV panel. The semiconductor layer has half the thickness of a red blood cell.
• CdTe PV panels can be recycled at end-of-life. Over 140,000 metric tons of panels have been recycled through 2015.
• CdTe PV technology is proven. Over 100 million modules have been installed worldwide, and its safety and benefits have been confirmed by research institutes such as Brookhaven National Laboratory and the National Renewable Energy Laboratory\(^1\).
• At end-of-life, CdTe PV panels are non-hazardous according to the Method 1311 Toxicity Characteristic Leaching Procedure (TCLP).

<table>
<thead>
<tr>
<th>Certification</th>
<th>Purpose</th>
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<tbody>
<tr>
<td>ISO 14001; ISO 9001; OHSAS 18001</td>
<td>Environmental management; Quality &amp; Design; Occupational Health and Safety</td>
</tr>
<tr>
<td>IEC 61646; IEC 61730; IEC 61701; IEC 60068</td>
<td>Design qualification &amp; approval; Safety qualification; Salt mist corrosion; Desert sand resistant</td>
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<tr>
<td>UL 1703</td>
<td>PV Module Safety and Reliability</td>
</tr>
<tr>
<td>UL; CEC; Golden Sun; MCS; JET</td>
<td>Regional standards: North America, Australia, China, U.K., Japan</td>
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<tr>
<td>Thresher Test &amp; Long-Term Sequential Test</td>
<td>Long-term reliability under prolonged exposure to harsh environments</td>
</tr>
<tr>
<td>Atlas 25+ Durability Testing</td>
<td>Combined long-term environmental degradation stresses for PV modules</td>
</tr>
<tr>
<td>VDE Quality Tested</td>
<td>Certifying entire PV power plant systems for quality and reliability</td>
</tr>
<tr>
<td>Fraunhofer PV Durability Initiative</td>
<td>Durability benchmarking program confirming best-in-class long-term PV module durability</td>
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Our semiconductor layer is 3% of the thickness of a human hair.