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Food Security and Climate Change Seminar

The Greening Effect on the Productive Sectors

André Gibson

Williams everGREEN Ltd

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What is Greening?

- **Greening** is the process of transforming artifacts such as a space, a lifestyle or a brand image into a more environmentally friendly version (i.e. 'greening your home' or 'greening your office'). The act of greening involves incorporating "green" products and processes into one's environment, such as the home, work place, and general lifestyle. Wikipedia
- For more about “Greening” your business, look into the Green Business Barbados program by the Future Center Truss.

GREEN BUSINESS BARBADOS

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Types of Greening

- **Energy efficiency - the goal of efforts to reduce the amount of energy required to provide products and services.**
- **Renewable energy - is energy which comes from natural resources such as sunlight, wind, rain, biomass, tides, waves and geothermal heat, which are renewable (naturally replenished).**
- Re-usability
- Responsible packaging and labeling
- Recycled content
- Reduced toxicity
- Intelligent design
- Responsible manufacturing techniques
- Reduction of personal environmental hazards

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Major Types of Energy Efficiency

- Lighting – Natural Lighting, LED, Compact Flourscents.
- HVAC - Inverter AC Split Units, Solar AC Units, Building Controls & Automation.
- Appliances - TV's, Computers, Refrigerators, freezers, ovens, stoves, dishwashers, washers & dryers.
- Building Design - LEED (Leadership in Energy and Environmental Design).
- Vehicles – Electric, Alternate Fuel, higher mpg ratings.

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Renewable Energy Sources

- **Solar - Utilization of the radiant energy from the Sun.**
- Wind - Conversion of wind energy into electricity.
- Biomass - living and recently dead biological material as fuel.
- Geothremal - Generated by heat stored in the earth or ocean.
- Hydropower - Flowing water creates energy that can be captured and turned into electricity.
- Wave - Mechanical energy from the tides and waves.

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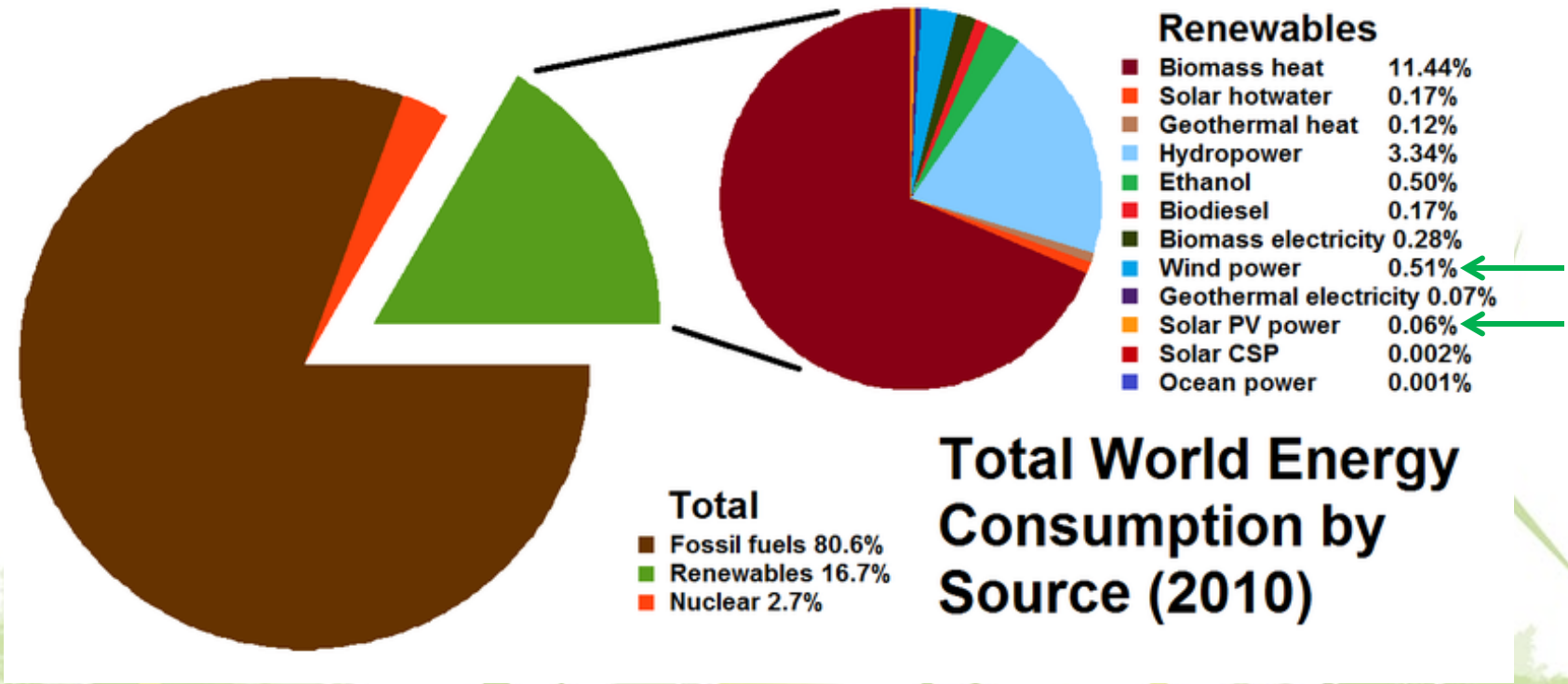
World Energy Consumption



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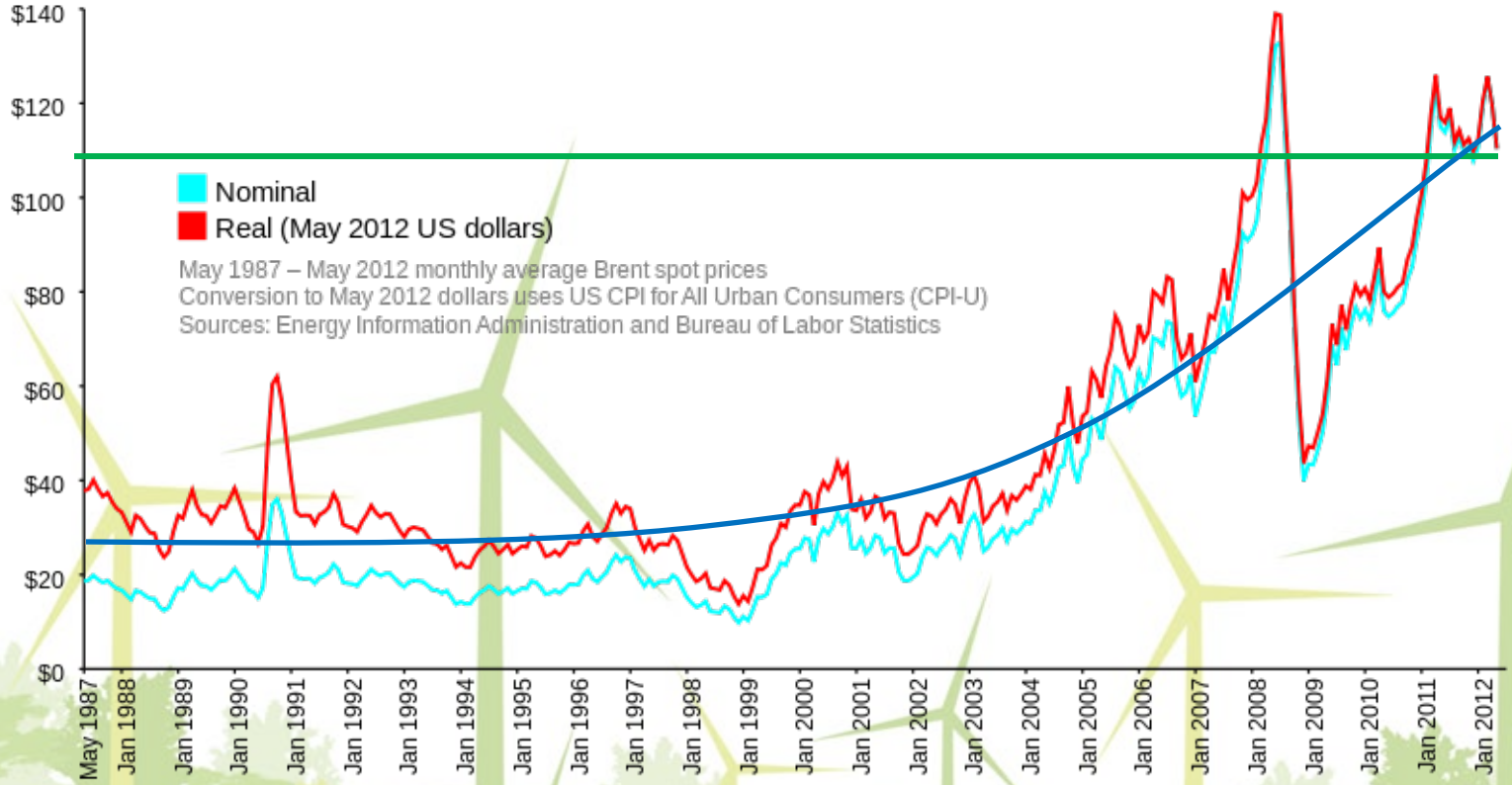
Oil Price History



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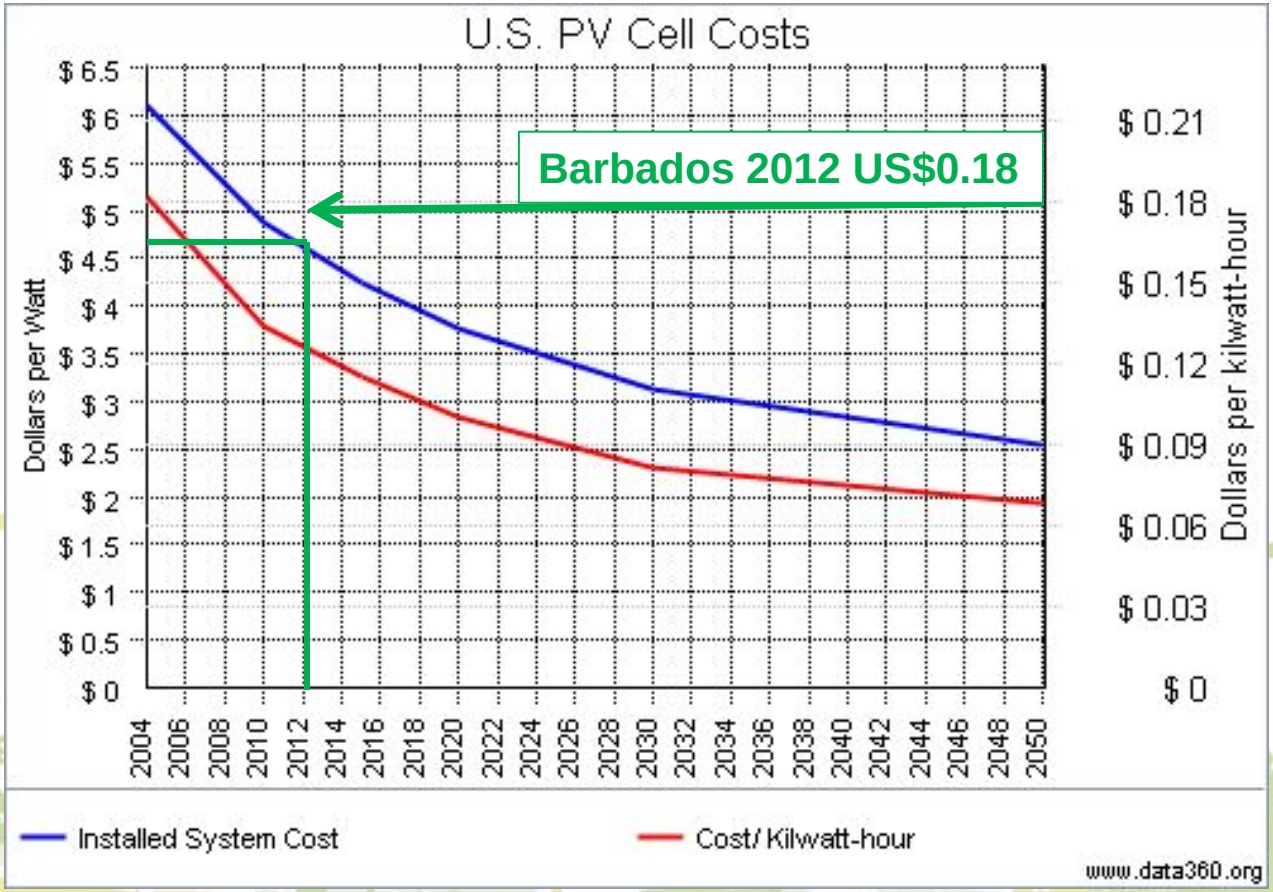
Photovoltaic Price History



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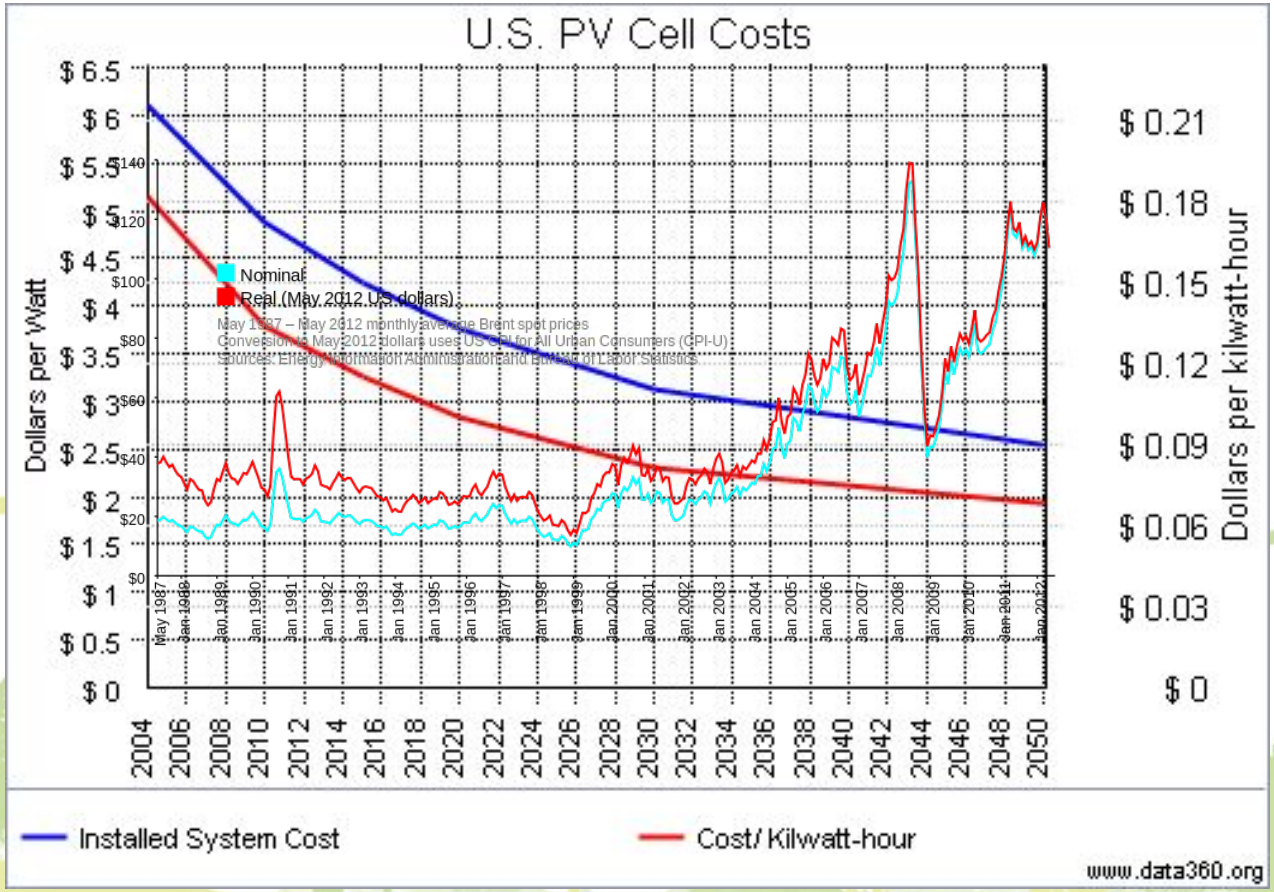
Photovoltaic Oppertunity



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Interesting Facts about PV

- Barbados consumes 950,000,000 kWh per year
- Just two (2) sq.miles of Photovoltaics would provide 100% of Barbados's annual consumption.
- Or 1.25% of our 166 sq.miles of land area
- It would cost approximately USD$1.6 Billion
- Assuming USD$250M annualy of fuel cost for electricity
- The payback would be 6.4 years
- 4% of the worlds deserts could produce 100% of electricity used on earth each day.

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Grid Tied Renewable Generation Systems

- The BL&P Launched it's Renewable Energy Rider (K10) in July 2010 as a two year pilot project.
- Customers are eligible to connect and operate in parallel with BL&P's Grid, the RGS must be wind and/or solar powered with a maximum aggregate capacity per facility of:
  - (i) 5kW (AC) for installations serviced under the Domestic Service, Employee and General Service tariffs; or
  - (ii) 150kW (AC) for installations serviced under all other tariffs.

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PV System Economics

- Example System Size of 50 KW (requires 3,500 sq. ft roof space)
- System Cost $425,000 VAT Ex ($8.50/watt installed)
- Annual Production 82,125 kWh (4.5 kWh/KW per day Yield)
- Est. Energy Cost $0.65/kwh (12 mth avg & *1.6 Buyback Multiplier)
- Annual Savings $53,875
- Simple Payback 7.9 years
- Return on Investment (ROI) 12.7%
- Assumptions
  - 0.5% Annual Maintenance & Insurance Cost
  - 0.75% Annual System Output Degration
  - No Incentives

**Pending FTC Review*

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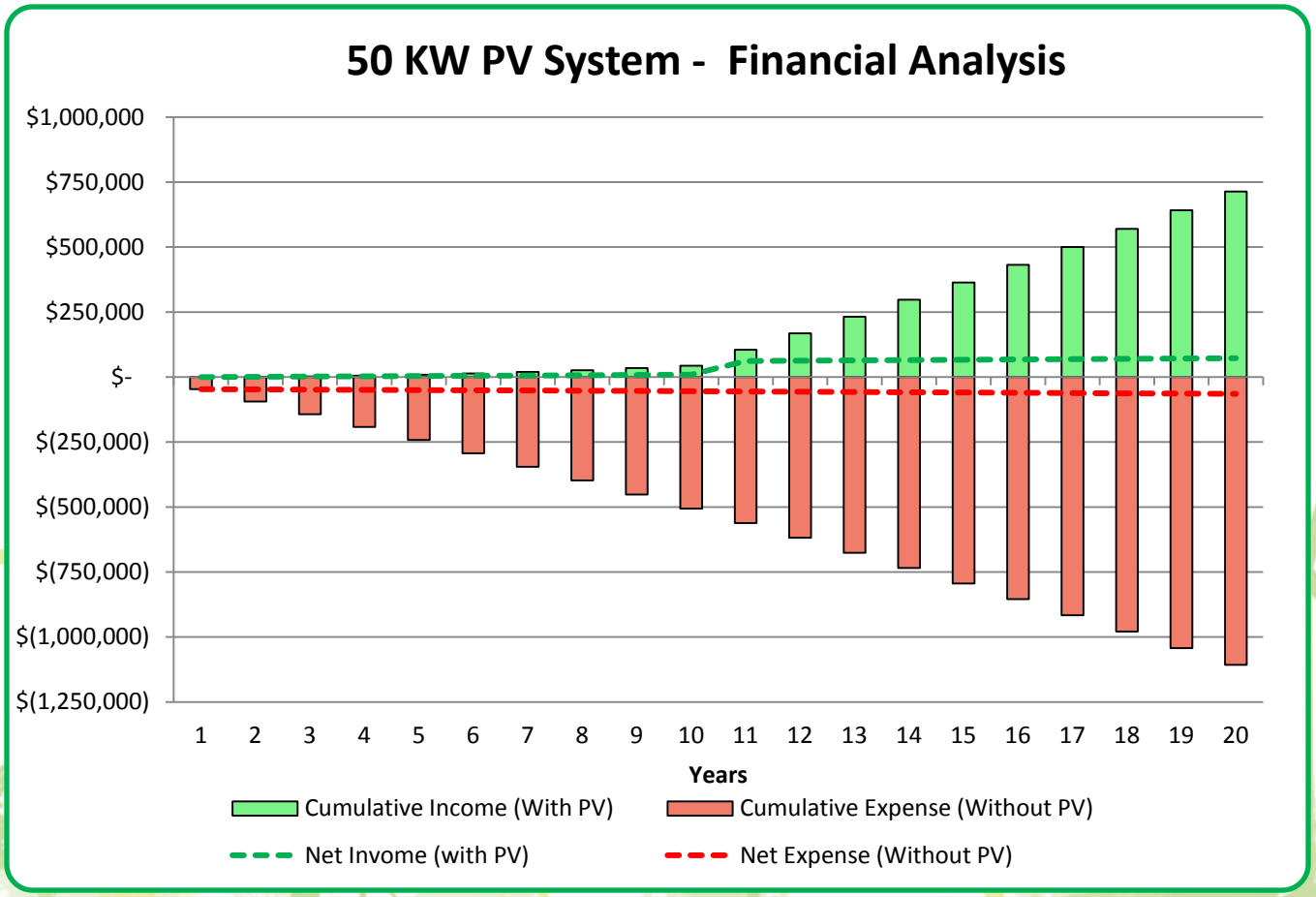
PV System Economics



- Assumptions
  - 8.5% Finance Cost
  - 2.5% Annual Energy Cost Increase

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WII 1.4 MW Project

- **10 Sites** – Ranging from 30 kW to 150 kW
- **Six Months Installation**
  - 5,112 Pannels
  - 198 Inverters
  - Over 100,000 sq.ft roof top array
- **Annual Production** – 2,157,896 kWh
  - 33% of the 10 sites consumption
  - 0.25% of Barbados's annual consumption

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WII 1.4 MW Project

BRC & WII – Two (2) 150 Kw

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WII 1.4 MW Project

SBRC Recycling Plant 150 Kw

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WII 1.4 MW Project

NSR Haggatt Hall Mall 150 Kw

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WII 1.4 MW Project

Haggatt Hall 150 Kw

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WII 1.4 MW Project

Williams Equipment 140 Kw

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Financial Incentives

- **2011 Budget**
  - Energy Conservation deduction
    - Individual - $10,000
    - Business - $25,000
  - 50% Land Tax deduction for RE producers
  - 150% depreciation on capital expenditure over five (5) years.
  - $5,000 rebate to farmers.
- **2012 Budget**
  - Zero rate of VAT to apply to all RE and EE systems.
  - an income tax holiday for ten years.
  - a deduction of 150% of interest on loans for certain activities.

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Next Steps

- **Increase Grid Tie Limit – Raise the grid tie limit from 150 kW to 80% of large consumers consumption**
- **FTC Renewable Rider Review – Support and pay close attention to this process, it's governs how RE will move forward.**

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Questions ?

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