Financial Realities of Renewable Energy for Sustainable Tourism

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The Solar Age Has Dawned
Solar Light Levels

Solar PV Market

PV Installations in 2005
Regional Megawatt Breakdown

- Germany: 57%
- Japan: 20%
- Rest of World: 10%
- United States: 7%
- Rest of Europe: 6%

TOTAL: 1,460 MW

Source: Solarbuzz LLC
National Renewable Portfolio Standards

State RPS

Solar water heating eligible
Market Opportunity

- Hotels
- Restaurants
- Military Bases
- Dormitories
- Hospitals
- Laundries
- Health Clubs
- Fire stations
- Car Washes

Data Sources: US Energy information Administration & NC Utilities Commission; graph generated by FLS Energy.
Benefits of Solar Energy

- Reduction in Utility Bills
- Cost-effective investment
  - 3 - 10 year ROI
  - 25+ year system life
- Tax incentives
  - 30% federal tax credit; 35% NC
  - Accelerated depreciation
- Earn LEED Points
  - As many as 5 points
- Marketing Opportunities
- Environmental Benefits
  - Reduces fossil fuel consumption
  - Emits no pollution
- Improved energy security

The Market Place Restaurant, Asheville, NC
Solar Energy Options for Attractions & Accommodations

Proximity Hotel, Greensboro, NC

**Solar Thermal (Hot Water)**

Natural Science Center of Greensboro, NC

**Photovoltaic (Electric “PV”)**
How Solar Thermal Works
Solar Thermal Flat Plate Collectors

- **Inlet connection**
- **Collector housing**: made from aluminium alloy or galvanized steel - fixes and protects the absorber plate
- **Flow tubes**
- **Insulation**: to the bottom and sides of the collector to reduce loss of heat
- **Outlet connection**
- **Cover**: protecting the absorber plate and preventing loss of heat
- **Absorber plate**: usually black chrome absorbing coating to maximise heat collecting efficiency
Solar Hot Water System Costs

Avg. Cost: $90K - $450K, 1000 gallon – 5000 gallon

Federal Grant Program:

30% of project. No more than 50% of your total tax liability. Can take over 5 years.

NC State Tax Incentives:

35% of project. No more than 50% of your total tax liability. Must be taken in 20% increments over 5 years.

Accelerated Depreciation:

Total apx. 25% of system cost, over 5 years

www.dsireusa.org
Return on Investment: 100 panel, 5000 gallon

Solar Energy System Cash Flow

Dollars

Year

Annual Cash Flow
Cumulative
Guilford College, Shore Hall, 600 Gallons

Therms of Natural Gas

Before SDHW 2004 - 2006
After SDHW 2007 - 2008

Therms of Natural Gas

January
February
March
April
May
June
July
August
September
October
November
December
Purchase Model

- Tax Credits
- Client
- Solar Company
- REC
Solar Energy Purchase Agreement (SEPA)

Client

Solar Company

Tax Credits

REC
Solar Energy Purchase Agreement (SEPA)

Advantages
- Low upfront cost
- Minimal Risk
- Maintenance
- Low, predictable energy cost
Lock in Low, Predictable Solar Energy Prices

Savings of Solar vs Natural Gas
Based on Given Amount of Hot Water

- natural gas (@ 5% annual increase)
- natural gas (@ 3% annual increase)
- solar

Year

1 6 11 16

Annual Cost ($)
Proximity Hotel
Greensboro, NC
LEED Platinum Certified
Hilton Asheville
Biltmore Park, Asheville, NC
1st for Hilton Brand
Courtyard Marriott Downtown
Greenville, SC
Largest solar thermal system in SC
How Solar PV Works

What is a kWh?  Watts * time = kWh

100 watt CFL * 10 hours = 1kWh
PV System Costs

**Avg. Cost:** $50K - $1.25M, 10 kW system – 250 kW system

**Federal Grant Program:**

30% of project. No more than 50% of your total tax liability. Can take over 5 years.

**NC State Tax Incentives:**

35% of project. No more than 50% of your total tax liability. Must be taken in 20% increments over 5 years.

**Accelerated Depreciation:**

Total apx. 20-25% of system cost, over several years

**Progress Territory customers:**

Tie-in to grid and receive $0.18 per kWh Deduction in bill or check for overage.
PV System Financing

- State and Federal Incentives
- Power Purchase Agreements: PPAs
  - Through private companies
  - Utility Companies
- Site Lease Agreements – 3rd party financing
Renewable Energy Certificates

RECs are:

- the environmental attributes of clean energy.
- the premium value of renewable energy beyond the market value of conventional fuels such as coal and nuclear.
- desired by utility companies.
- added value.
“Proximity’s solar energy system serves as a business-minded, tangible expression of the company’s commitment to the community and the environment. It attracts a clientele that values this commitment.”

Dennis Quaintance, Developer
Proximity Hotel, 2008
A Diverse Economy Cultivates Stability

By Nancy Oakes

Just the fact that county interest in green technology is down, said Michael Shore, president of solar panel manufacturer seeSolar.

The New York Times

Making Environmental Sustainability a Reality

Guilford College Magazine

News for Alumni and Friends | Spring 2007

A Season to Remember for Men’s Basketball

The executive director of the Asheville Rape Crisis Center expressed concern about potential cuts to the organization's funding.

The Asheville Regional Airport received a $75.7 million grant to expand its passenger terminal.

STIMULUS INVESTMENTS

In addition, the state of North Carolina received a $50 million grant for its transportation infrastructure projects.

ASHEVILLE

The city of Asheville was awarded a $10 million grant to support its green energy initiatives.

The Asheville Greenbuilding Council was established to promote sustainable development in the region.

The Asheville School received a $2 million grant to support its innovative educational programs.

The Asheville Art Museum received a $1.5 million grant to support its expansion and renovation efforts.

The Asheville Symphony received a $500,000 grant to support its musical outreach programs.

The Asheville Opera received a $250,000 grant to support its production of "The Magic Flute."
Nothing is as powerful as an idea whose time has come

-- Victor Hugo

Want more information about renewable energy for your attraction or accommodation?

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