



*...environmentally silent solutions...*

# The Case for Solar

Alternative Power Sources Limited

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*Managing Director*

# Jamaica: Sunshine Country

- \* 177 MJ/m<sup>2</sup> per year (approximately 5 times annual energy requirement) – [www.pcj.com](http://www.pcj.com)
- \* Up to 1,100 W/m<sup>2</sup> is received at midday
- \* 18° 15' N and 77° 30' W of the equator
- \* Average 5 hours per day of peak sun hours

# Jamaica: Sunshine Country

## ❖ Advantages of Solar Energy:

- \* Free Fuel
- \* Abundant and unlimited
- \* Indigenous

## ❖ Disadvantages of Solar Energy

- \* Relatively high capital to convert to usable energy\*
- \* Cannot guarantee firm capacity\*
- \* Has a relatively low capacity factor compared to other energy conversion technologies

# Types of Solar Energy

## ❖ Solar Electricity:

- \* Solar Photovoltaic (PV)
- \* Solar Concentrated PV
- \* Efficiencies of 8% - 15% (Full Systems)

## ❖ Solar Thermal/Heat:

- \* Solar Water Heaters
  - \* Evacuated Tubes
  - \* Flat Plate Collectors

# Types of Solar Energy

- ❖ Large Scale Commercial Solar Power Plants:
  - \* Solar PV Farms (most costly with lowest capacity factor)
  - \* Solar Parabolic Trough Plants
  - \* Solar Tower Plants
  - \* Solar Dish (used with Stirling engine)

# Types of Solar Energy

## ❖ Residential Systems

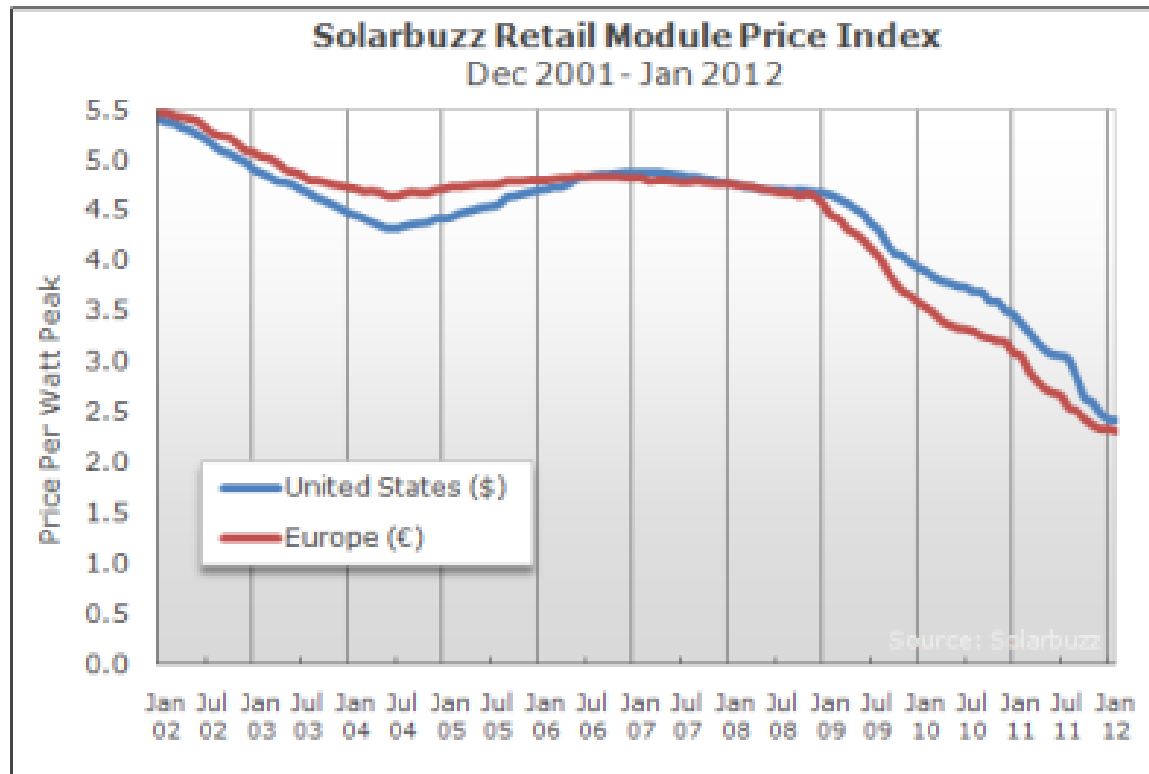
- \* Battery-based
- \* Grid-Tied
- \* Hybrid (Solar Battery-based and Grid-Tied)
- \* Hybrid (Solar and Wind)
- \* Solar Water Heaters

# How far have we come?

- \* Approximately 360KW of Residential PV
- \* Approximately 110KW of Commercial PV
- \* Approximately 7,800 residential SWH installations
- \* Approximately 1% of country's annual energy demand being met by solar energy
- \* Few technocrats with recognized Solar technologies and/or related qualifications and experience

# Cost of Going Solar

- \* Competitive pricing with conventional energy supply.



[www.solarbuzz.com](http://www.solarbuzz.com)



# Inhibitors to the Industry

- \* 'Overnight' Companies
- \* 'Overnight' qualifications or experience
- \* More incentives and funding/subsidies needed
- \* Social awareness is very low
- \* Lack of expediency from government/regulation agencies and departments

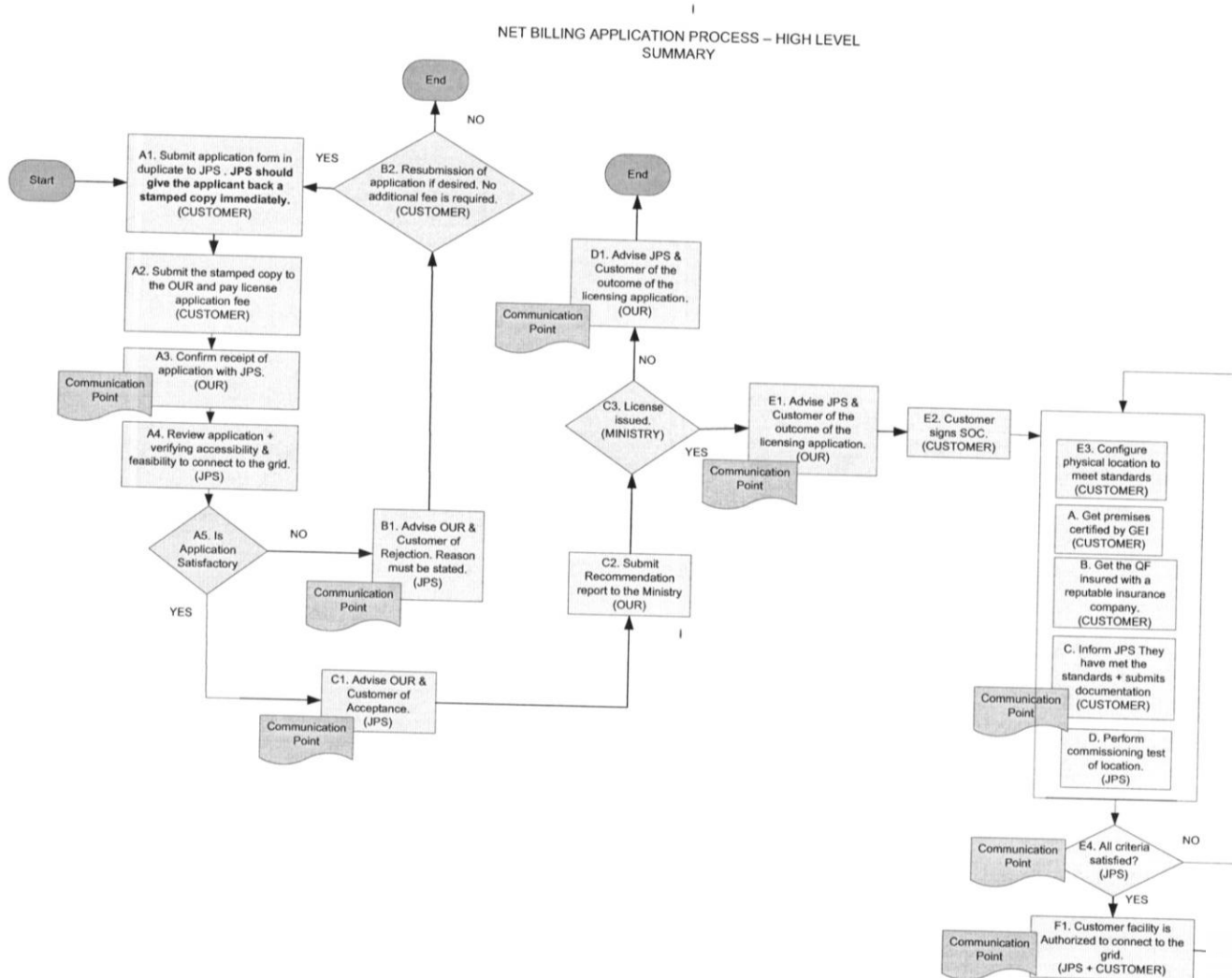
# Where do we want to go?

## ❖ Net Billing - Fully Rolled Out

- \* Helps to increase reliability of distribution network
- \* Incentive for increase in renewable energy mix to facilitate government policy
- \* Reduces dependency on battery bank which reduces system cost and mitigates battery disposal issues
- \* Improves payback period for grid-tied PV systems to 4 – 6 years
- \* What is happening with net billing?

# Where do we want to go?

## Flow Chart for Net Billing:



Net Billing Flow Chart, Courtesy of JSEA

# Where do we want to go?

- \* Approximately 1,500KW of residential PV by 2015
- \* Approximately 1,000KW of commercial PV by 2015
- \* Approximately 9,800 residential SWH installations by 2015
- \* Approximately 5% of country's annual energy demand being met by solar energy by 2015
- \* Qualified and skilled practitioners with recognised qualifications (Important for market integrity not to be compromised)
- \* Local SWH manufacturing and assembly facility

# Where do we want to go?

## ❖ Increase awareness

- \* Social Programmes
- \* Seminars
- \* Conferences and workshops

## ❖ Regulate Industry

- \* Authorised Solar systems (PV and SWH) installers
- \* Authorised energy consultants (CEM's, CEA's)
- \* Recognized relative qualifications and experience
- \* Enact standards and policy through Bureau of Standards and Ministry of Energy to protect industry

# APS Playing its Part



- \* Providing world class service and installations
- \* Over 23,000L of Commercial SWH installations
- \* Over 200KW of Commercial PV installations

# APS Playing its Part



*Caribbean's first 3 phase PV System at Green Produce Farms*

# APS Playing its Part



*Residence in Portland*



*Physics Department, UWI*



# APS Playing its Part



*Mystic Mountain*

# APS Playing its Part



Solar Water Heater Installation at The Palms, Richmond, St. Ann

# APS Playing its Part



Solar Water Heater Installation at The Palms, Richmond, St. Ann

# APS Playing its Part



*Solar Water Heater Installation at St. Ann's Bay Hospital*

# APS Playing its Part



Solar PV and Solar Water Heating System installed at a Residence in St. Andrew

# APS Playing its Part



Skystream 3.7 Wind Turbines installed at  
Digicel Caribbean Headquarters, Downtown Kingston

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