



Energy Efficiency in Jamaica

A National Imperative

**Global Energy Efficiency Workshop
United States Energy Association (USEA) &
United States Agency for International Development
(USAID)
Washington DC, USA
March 6 – 13, 2010**

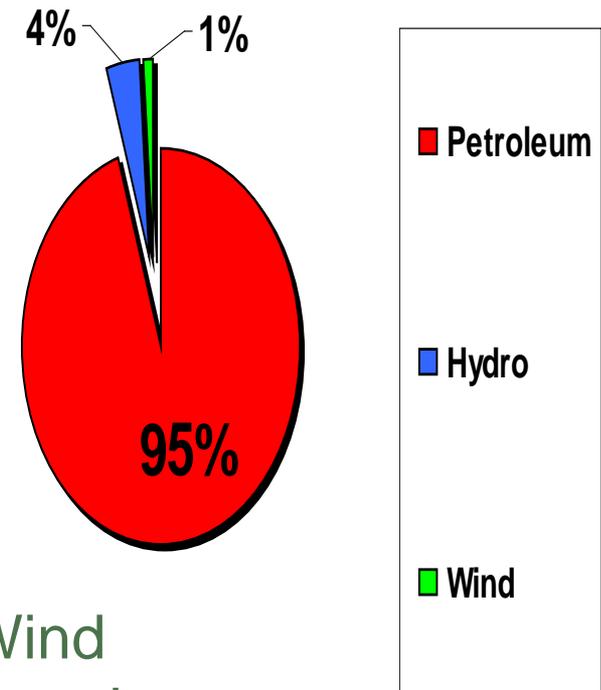
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PRESENTATION OUTLINE

- Profile of Jamaica's Energy Sector
- Jamaica's National Energy Policy
2009 – 2030
- Energy Conservation & Efficiency (ECE)
- ECE Priority Policy Areas
- Improving Energy Efficiency in Jamaica
 - Energy Supply Side
 - Distribution Systems
 - End Use and Demand Side Management (DSM)
- Implementation, Monitoring & Evaluation Framework

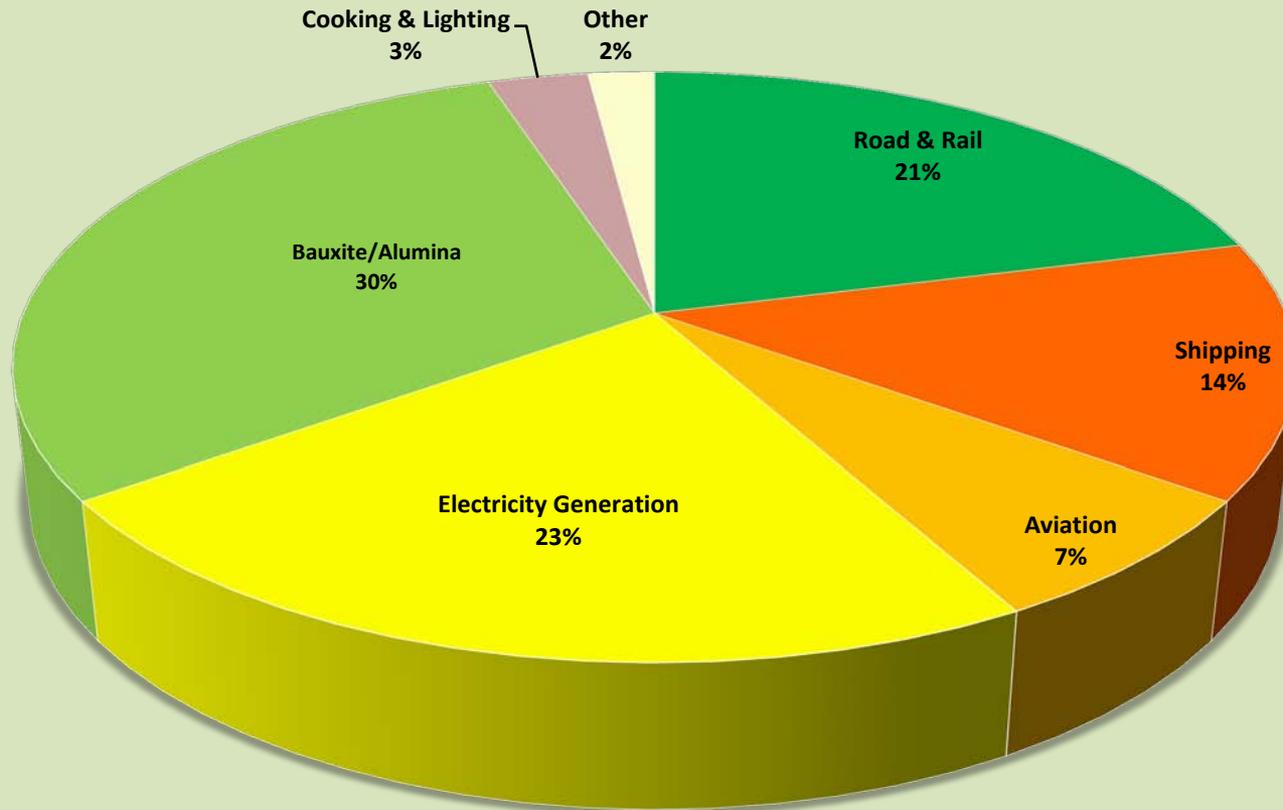
PROFILE: JAMAICA ENERGY SECTOR

- High dependence on imported oil
 - 2006 - 2008: Avg. annual import - 29.974 M bbls valued at US\$2bn
 - 39% of GDP, 2009
- High Concentration:
 - Bauxite/alumina – 30%
 - Power/electricity generation – 23%
 - Transport – 42%
 - Per capita consumption - 8.0boe
 - Excluding the bauxite sector - 5.0boe
- Low efficiency
 - Electricity generation – 29%,
 - Bauxite/Alumina – 75%– 85%
- Only 5% from Renewable - Hydro and Wind
- Need for an appropriate regulatory framework



Jamaica Energy Sector Profile (2)

Petroleum Consumption by Activity



Jamaica: National Energy Policy 2009 – 2030



**“Securing Jamaica’s Energy Future...
Advancing Competitiveness...Promoting
Sustainable Prosperity...”**

7 Priority Areas & Related Goals

1. **Improved Energy Conservation and Efficiency**
2. **Modernized Energy Infrastructure**
3. **Development of Renewable Energy Sources**
4. **Energy Supply Security & Diversification of Fuel Sources**
5. **Governance/Regulatory Framework**
6. **Government Ministries, Agencies & Departments as Model leader**
7. **Eco-efficiency and Green Economy**



“A modern, efficient, diversified and environmentally sustainable energy sector providing affordable and accessible energy supplies with long-term energy security and supported by informed public behaviour on energy issues and an appropriate policy, regulatory and institutional framework”

<p>Goal 1: Jamaicans use energy wisely and aggressively pursue opportunities for conservation and efficiency</p>	<p>Goal 2: Jamaica has a modernized and expanded energy infrastructure that enhances energy generation capacity and ensures that energy supplies are safely, reliably, and affordably transported to homes, communities and the productive sectors on a sustainable basis</p>	<p>Goal 3: Jamaica realizes its energy resource potential through the development of renewable energy sources and enhances its international competitiveness, energy security whilst reducing its carbon footprint</p>	<p>Goal 4: Jamaica’s energy supply is secure and sufficient to support long-term economic and social development</p>	<p>Goal 5: Jamaica has a well-defined and established governance, institutional, legal and regulatory framework for the energy sector, that facilitates stakeholder involvement and engagement</p>	<p>Goal 6: Government ministries and agencies are a model/leader in energy conservation and environmental stewardship in Jamaica</p>	<p>Goal 7: Jamaica’s industry structures embrace eco-efficiency, natural capitalism and moves towards building a green economy</p>
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Strategies and Key Actions to 2030

Implementation Framework – Action Plans etc.

Monitoring and Evaluation

Policy Review

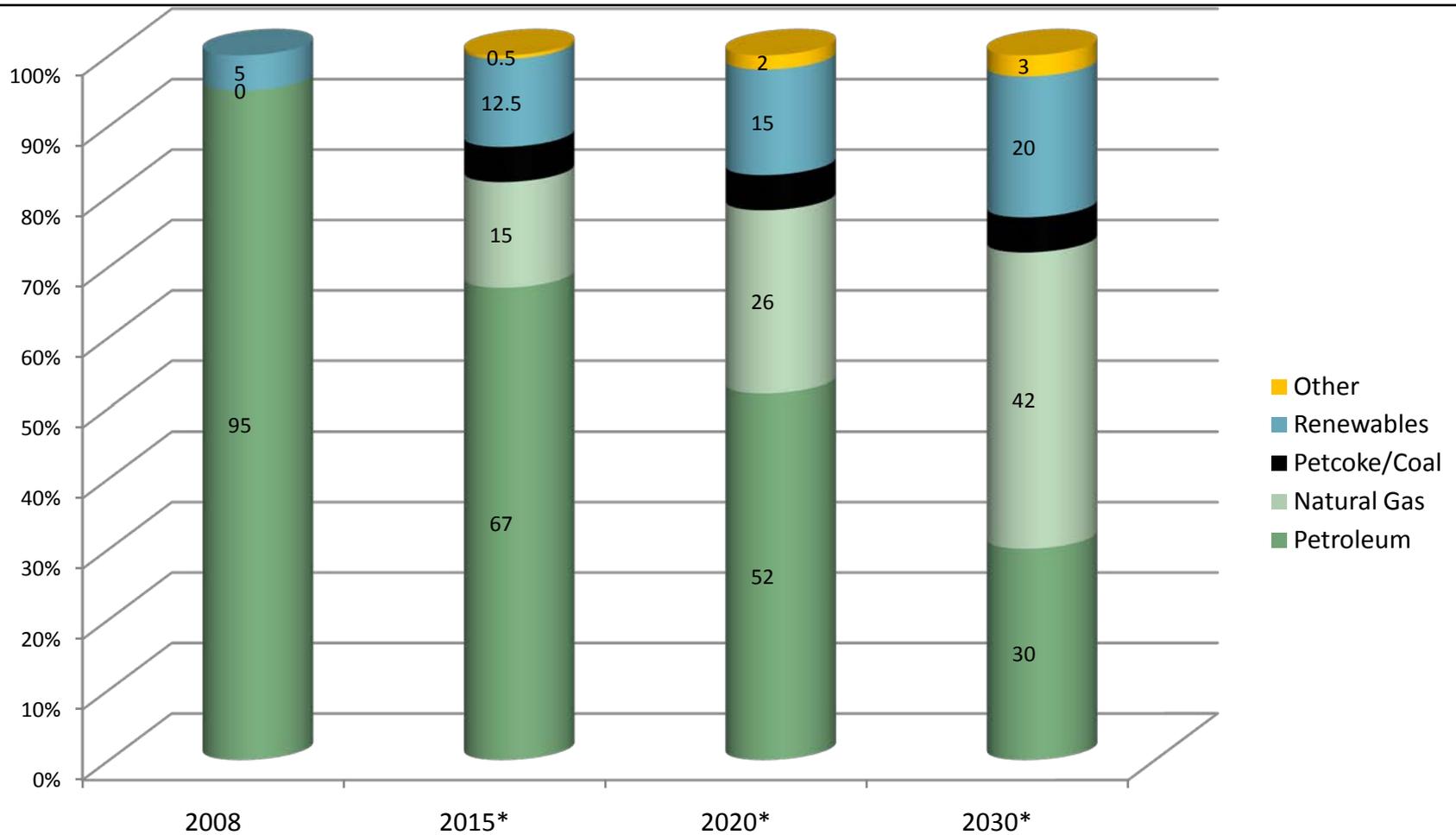
Jamaica: ECE Policy Priorities

- **Electricity Production**
- **Bauxite / Alumina Production**
- **Transportation**
- **Demand Side Management**
 - **Public Sector Consumption: National Water Commission (NWC); MDAs**
 - **Residential; Commercial & Industrial**
- **Development of comprehensive Legislative & Regulatory Framework**
 - **Codes, Standards & Labeling**
- **Institutional Framework & Capacity Building**
 - **ECE Market Development**

Improving Energy Efficiency (EE) in Jamaica – Supply Side

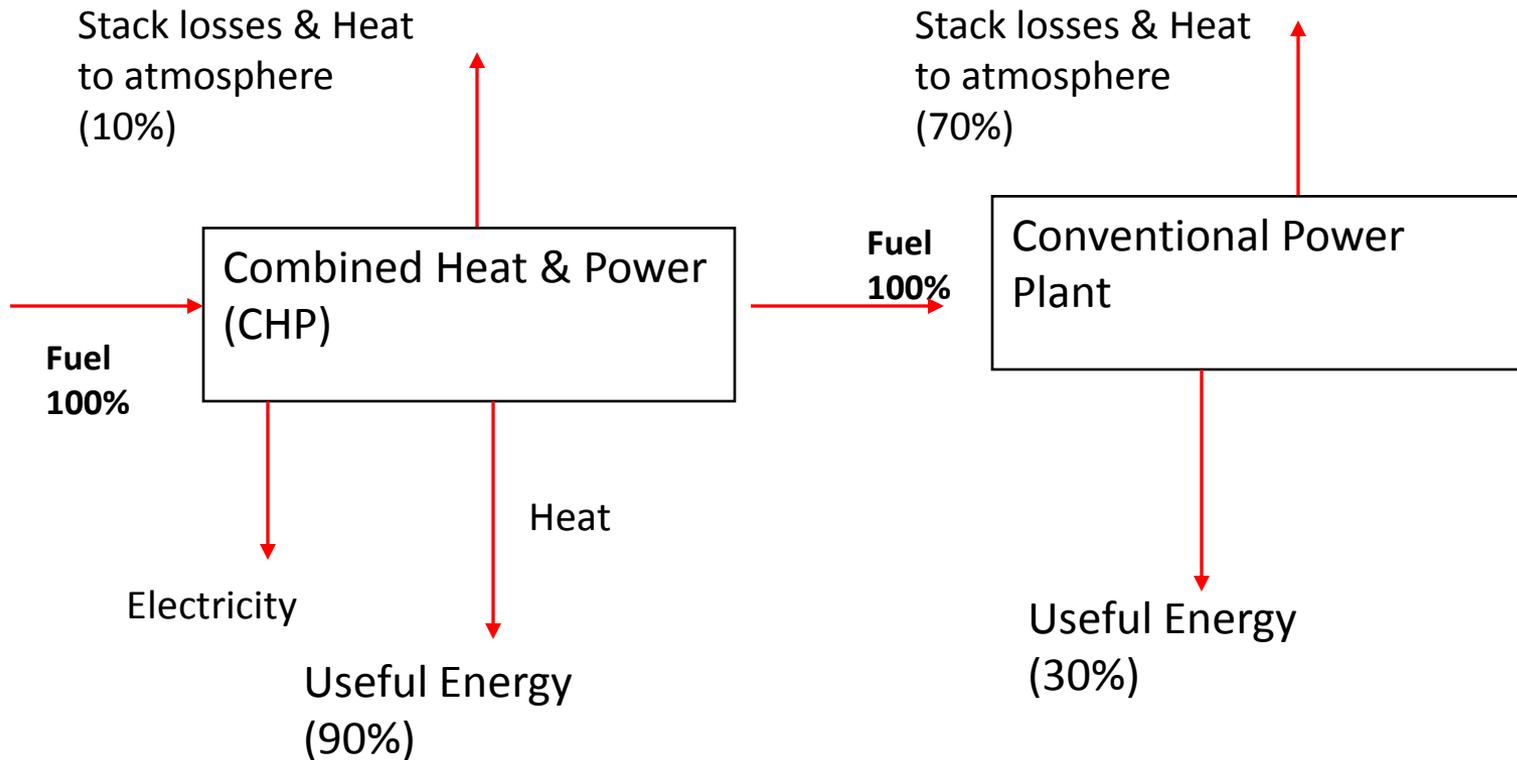
- Energy Security & Fuel Diversification - A strategic focus
 - Introduction of **Natural Gas (LNG)**
 - Pipeline Distribution Infrastructure
- Modernized Energy Infrastructure
 - Petrojam Refinery Upgrade
 - Co-generation (Combined Heat and Power, CHP)
 - Electricity Generation
 - Bauxite/Alumina - Electricity and Process Steam
 - Transmission and Distribution Systems
- Development of Renewable Energy Sources
 - Wind, Solar, Hydro, Biomass, Waste to Energy

Jamaica's Energy Supply Matrix



Improving Energy Efficiency in Jamaica

Supply Side: CHP vs. Conventional Power



Improving EE: Supply Side

- Electricity Generation: Installed Capacity 818 MW
 - Low efficiency: 458MW/56% < 29%
- T & D Losses – 23%
 - Technical – 10%
 - Non – Technical – 13%
- Overall Efficiency (**with Gas**)
 - Electricity generation → < 29% to 45-55%
 - With Process heat → >80%
- Strengthen Regulatory Framework
 - Accelerate Reduction of T & D losses < 20%
 - Improve Internal Efficiencies

Improving EE: Supply Side

- LNG:
- Bauxite / Alumina Refineries
 - Cogeneration (CHP)
 - Increase Generation to Grid from 138 MW to 354MW
 - Efficiency of 75% - 85% to be improved to greater than 90%
 - Improved Efficiency in the Electricity and Bauxite/Alumina Sectors will result in reduced energy intensity of the country

DEMAND SIDE MANAGEMENT (DSM) - A Multifaceted Approach

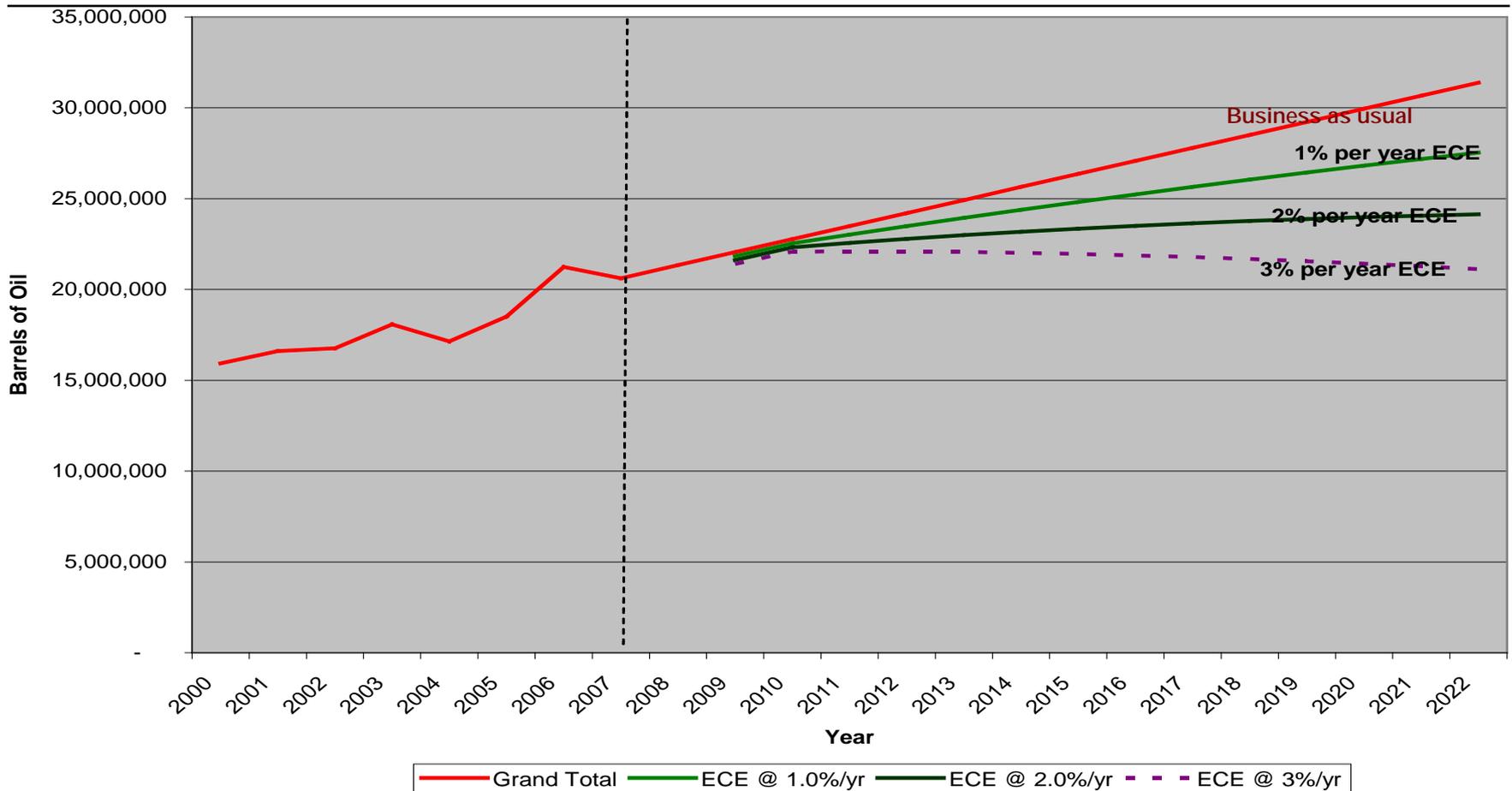


END USE AND DEMAND SIDE MANAGEMENT (DSM)

- **Immediate Results**
 - “Low Hanging Fruit” (Early RoI)
 - Wide Scale Participation of the Entire Society/Country
- **Jamaica’s Success with Previous DSM Programmes**
 - Partnership with WB, IDB, GEF, & CIDA
- **Reduction in Carbon Footprint**
- **Earnings from Carbon Emissions Trading**

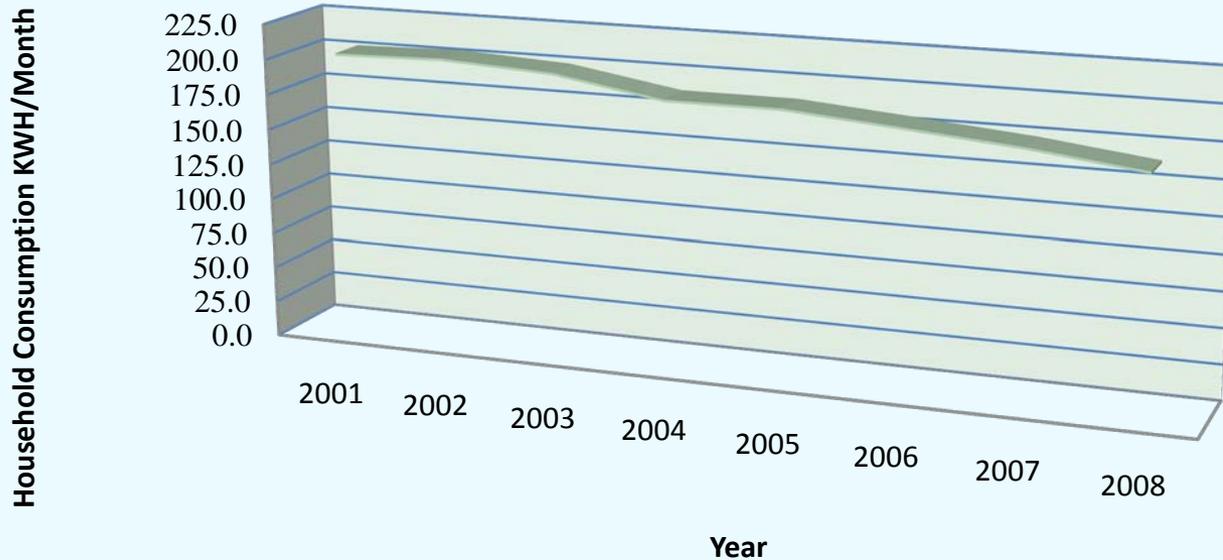
Opportunities - Reduce Consumption

**Jamaica Non Bauxite Energy Consumption Forecast
(Shows Three Scenarios of ECE Intervention)**



Household Electricity Consumption

Household consumption kWh/month
2000 - 2008



DSM: Transportation Sector

Policy Prescriptions:

- ❑ Renewable Fuels: (E-10, Biodiesel)
- ❑ Modernize motor vehicle fleet
- ❑ Improve infrastructure to facilitate transition to alternate energy vehicles
- ❑ Importation of more fuel efficient vehicles
- ❑ Increase mass transit usage
- ❑ Fiscal incentives to encourage conservation



DSM: Public Sector EE Program

Technical Cooperation - IDB

Objective:

- To support GOJ in ECE & Prepare ECE Program for Public Sector

Components:

1. Evaluation Energy Demand for Public Sector Buildings.
2. Cost Assessment of Public Sector Demand
3. Cost/Benefit Analysis of Retrofitting for ECE
4. Investment Plan for ECE
5. TOR for Energy Services Company (ESCO)

Achievements

- Project Team & Implementation Plan
- MOU Between MEM and JPSCo
 - Sharing of consumption patterns
- Advertisement for EOI
- Pre – Qualification of Potential Contractor
- RFP issued on March 4, 2010

Next Steps

- Complete Procurement
- Finalize Financial Arrangements to implement Investment Plan
- ECE Equipment Procurement
- Project Management Coordination & Capacity Building

DSM: Private Sector ECE Program

Building Codes, Standards & Labelling

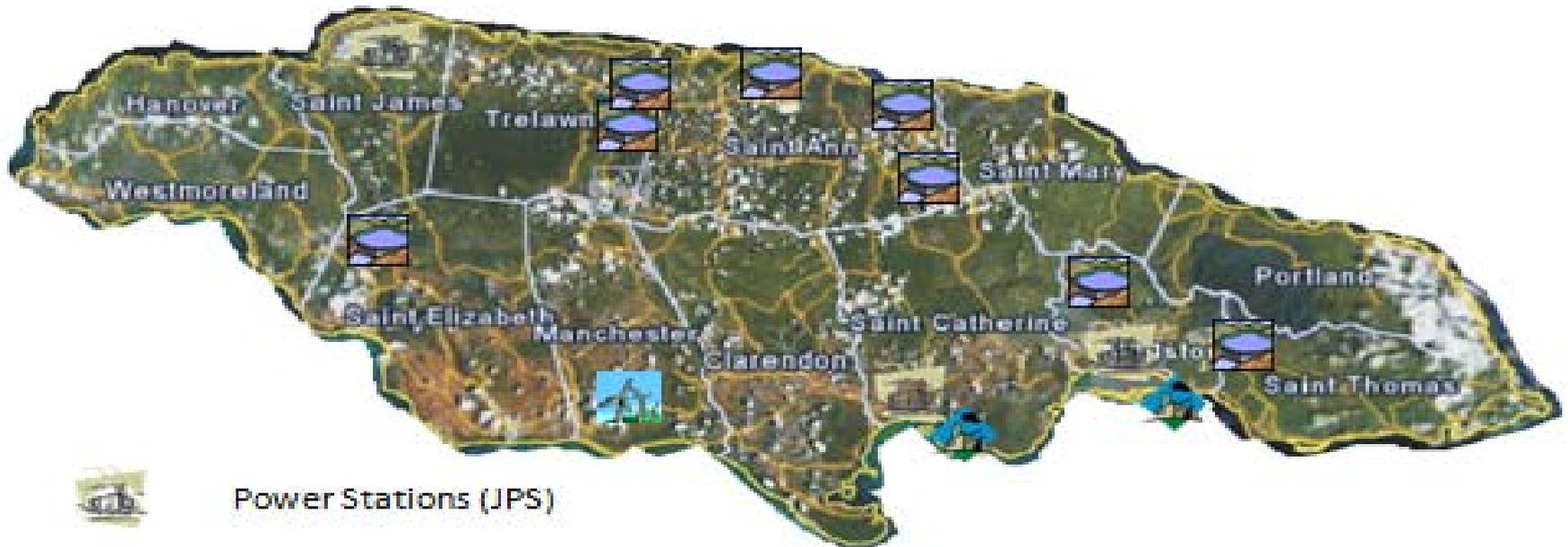
Main Focus:

- Energy Efficiency in Appliances and End Use Equipment
- Energy Efficiency Design
 - Building Codes
- Develop Energy Efficiency Market
 - Fiscal Incentives/Disincentives for ECE (CFL/LED/ACs etc)
 - Smart Meters
 - Testing and Certification
- Facilitate Energy Services Companies

Implementation, M & E Framework

- ✓ **Clearly defined Roles and Responsibilities**
- ✓ **Stakeholders Involvement and Participation**
- ✓ **Strategic Plans, Programmes and Interventions**
- ✓ **Develop Legislation to support investments in ECE**
- ✓ **Promote Policy, Legislative & Regulatory Coherence (supply, distribution & demand)**
- ✓ **Empowerment of the Regulatory Agencies**
- ✓ **Development Institutional Framework**
- ✓ **Promote Education and Training in ECE**
- ✓ **Energy Information Clearing House**
- ✓ **Policy Review Process**

GENERATING STATIONS ACROSS JAMAICA



Power Stations (JPS)



Power Stations (IPPS)



Hydro Plants (JPS)



Wind Farm (PCJ)

March 4, 2010

Prepared By Ministry of Energy

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The Ministry of Energy and Mining

Jamaica's National Energy Policy 2009-2030

*"Securing Jamaica's Energy Future...
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THANK YOU!

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Ministry of Energy and Mining, Jamaica