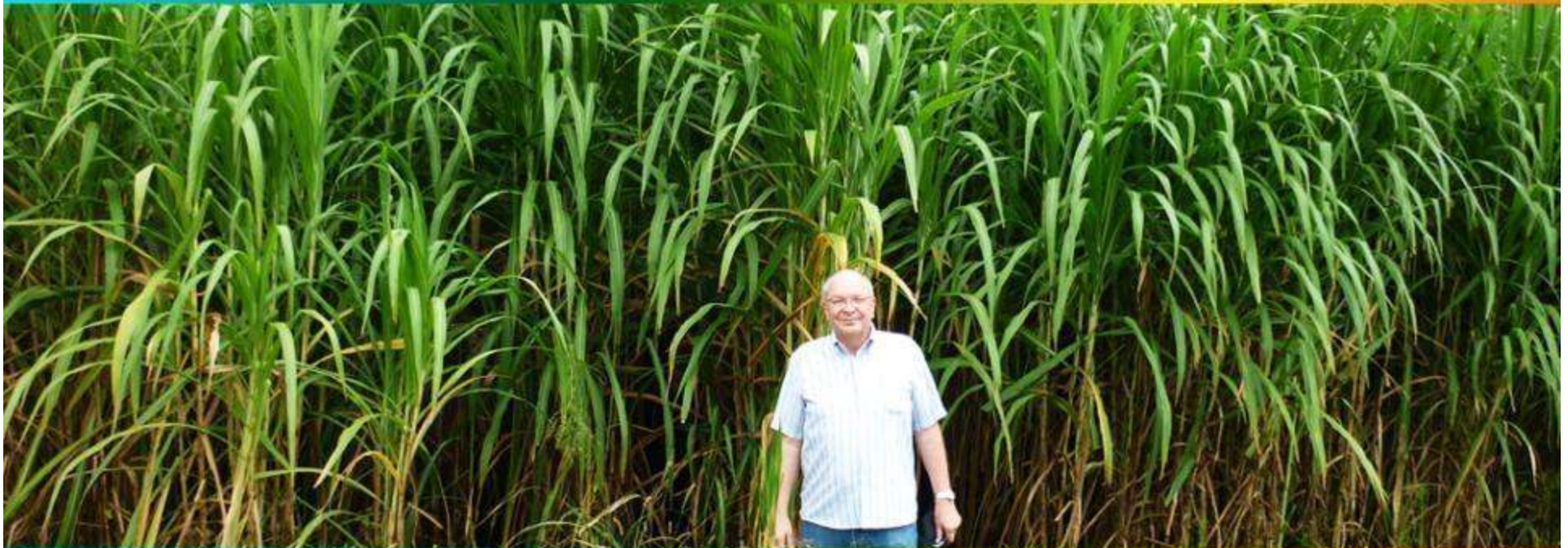


# Giant King Grass For Biomass Electricity in Caribbean Region



Clean Energy for a  
Cleaner Tomorrow



## GROW YOUR OWN ELECTRICITY

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**Caribbean Renewable Energy Forum**  
**Aruba October 9-11, 2013**

# Advantages and Disadvantage of Biomass



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- Dedicated energy crop or agricultural residues
- Renewable, low carbon energy source that can be locally grown and provide jobs & energy security
  - Less expensive than oil or liquefied natural gas
- Can be stored to produce electricity 24 hours per day
  - Solar and wind are intermittent not base power
- Carbon neutral electricity production and growth
- Can also feed cattle, dairy cows, pigs and other animals or make pellets for export
- In the future, biomass can produce liquid biofuels, biochemicals and biomaterials
- BUT NEEDS SUNSHINE, LAND AND WATER TO GROW<sup>2</sup>



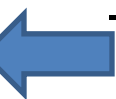
# Low Carbon, Renewable Biomass Electricity



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- 10-35 MW direct combustion biomass power plant using agricultural or wood waste or dedicated energy crop as fuel 
  - Reliable 24/7 base electricity



- 1-3 MW biogas power plant using anaerobic digestion
- Uses fresh grass or silage
  - Need 200 acres/megawatt
  - Also manure & organic waste 



# Compare Electricity Costs & CO2 Emissions



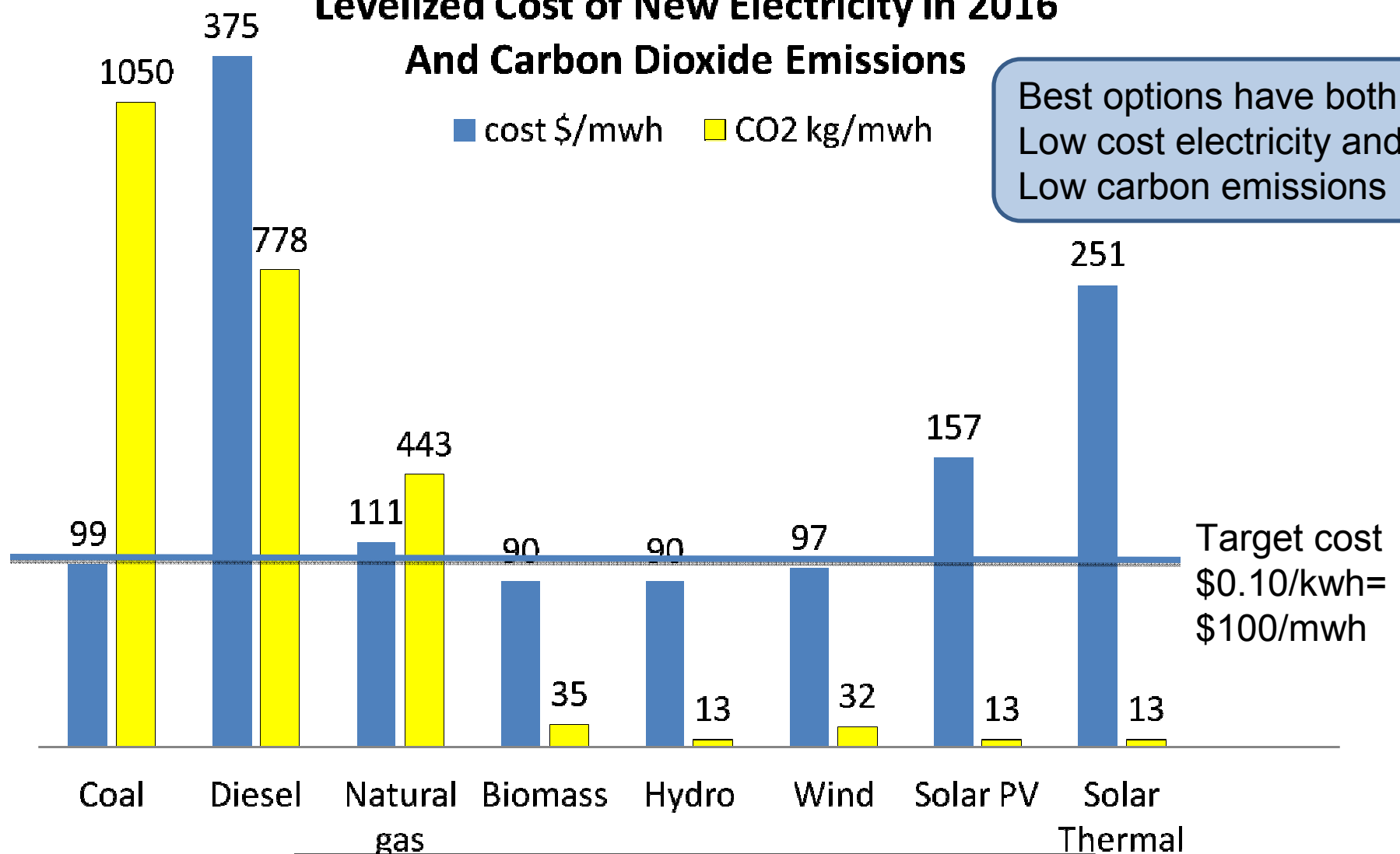
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## Levelized Cost of New Electricity in 2016

### And Carbon Dioxide Emissions

■ cost \$/mwh ■ CO2 kg/mwh

Best options have both  
Low cost electricity and  
Low carbon emissions



Must add the cost of backup to wind and solar



# VIASPACE Giant King Grass Grow Your Own Electricity



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- Need 200 acres/megawatt
- With adequate rainfall and/or irrigation
- Provides reliable source of fuel
- 1-3 MW using anaerobic digestion
- 10-35 MW using direct combustion





# Feeding Cattle, Dairy Cows, Pigs 14% Crude Protein



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# Advantages of Giant King Grass



Clean Energy for a  
Cleaner Tomorrow

- Versatile crop for many bioenergy applications
  - Electricity, pellets, biofuels, biochemicals & bio plastics
- Lowest cost--Can meet cost targets for energy & biofuels applications because of high yield of Giant King Grass
  - Can be used in combination w/ agricultural waste
- Perennial crop
  - Do not have to plant every year, just harvest
  - Short rotation—first harvested in 6.5 months
- Provides reliable, well documented, consistent quality fuel or feedstock with predictable, affordable price
  - Fuel supply reliability required for project financing

- VIASPACE works together with local country partners on integrated plantation and biomass power plants, pellet mill or biorefinery projects
  - Renewable and low carbon products
- VIASPACE has proprietary dedicated energy crop called Giant King<sup>TM</sup> Grass
  - Highest yield crop in the world
  - Tropical and subtropical, perennial grass
- VIASPACE with partners provides turnkey Giant King Grass power plant solutions