Complications of Using Biomass in Meeting Environmental Imperatives and Energy Independence:

New York's Perspective

John Saintcross
DOE Bio-Power Conference

NYSERDA
July 2011

nyserda
Energy. Innovation. Solutions.

About NYSERDA

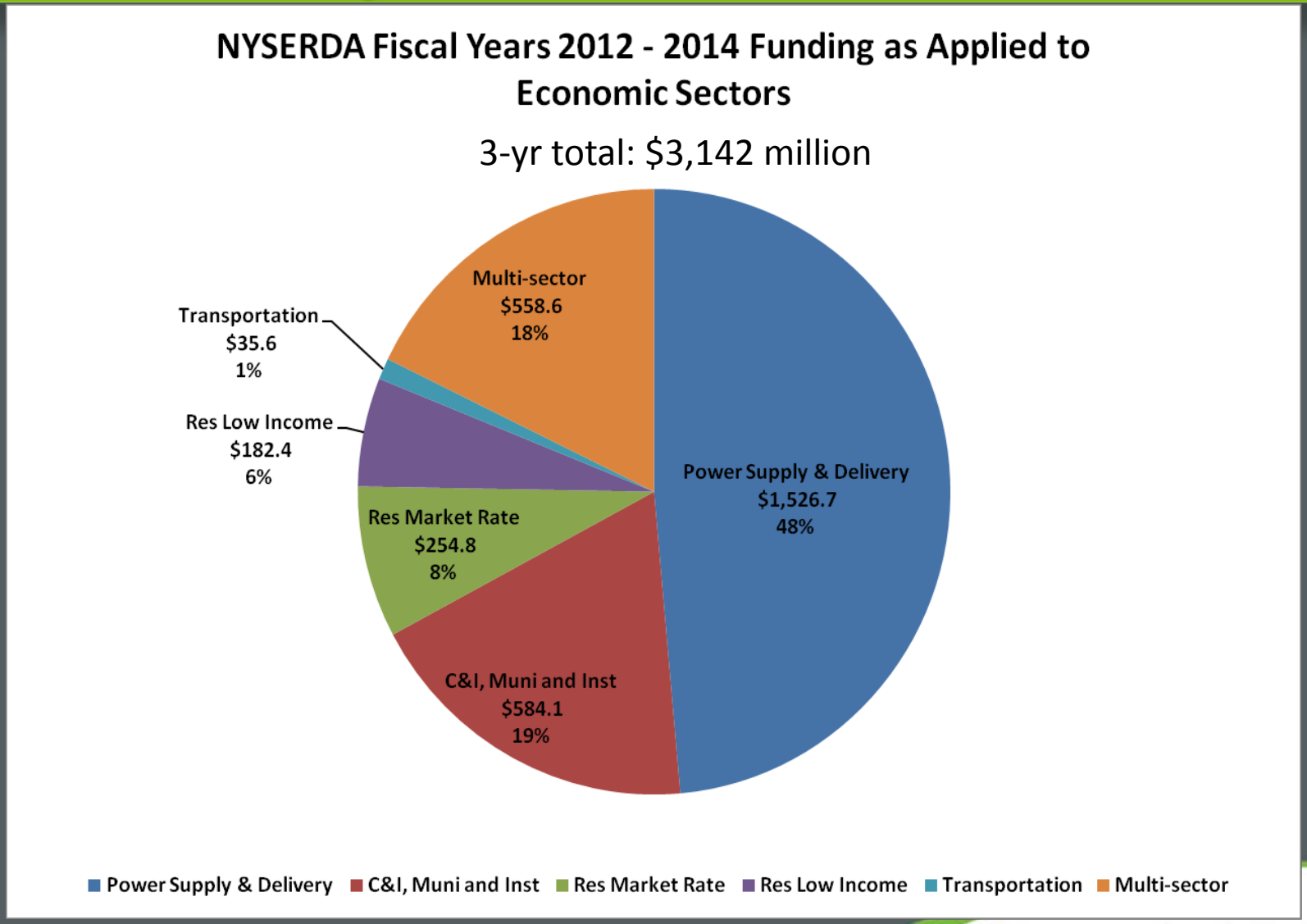
New York State Energy Research and Development Authority (NYSERDA) is a public benefit corporation. NYSERDA's earliest efforts focused solely on research and development with the goal of reducing the State's petroleum consumption. Today, NYSERDA's aim is to help New York meet its energy goals: reducing energy consumption, promoting the use of renewable energy sources, and protecting the environment.

Vision

Advance energy innovation and technology, transform New York's economy, empower people to choose clean and efficient energy as part of their everyday lives

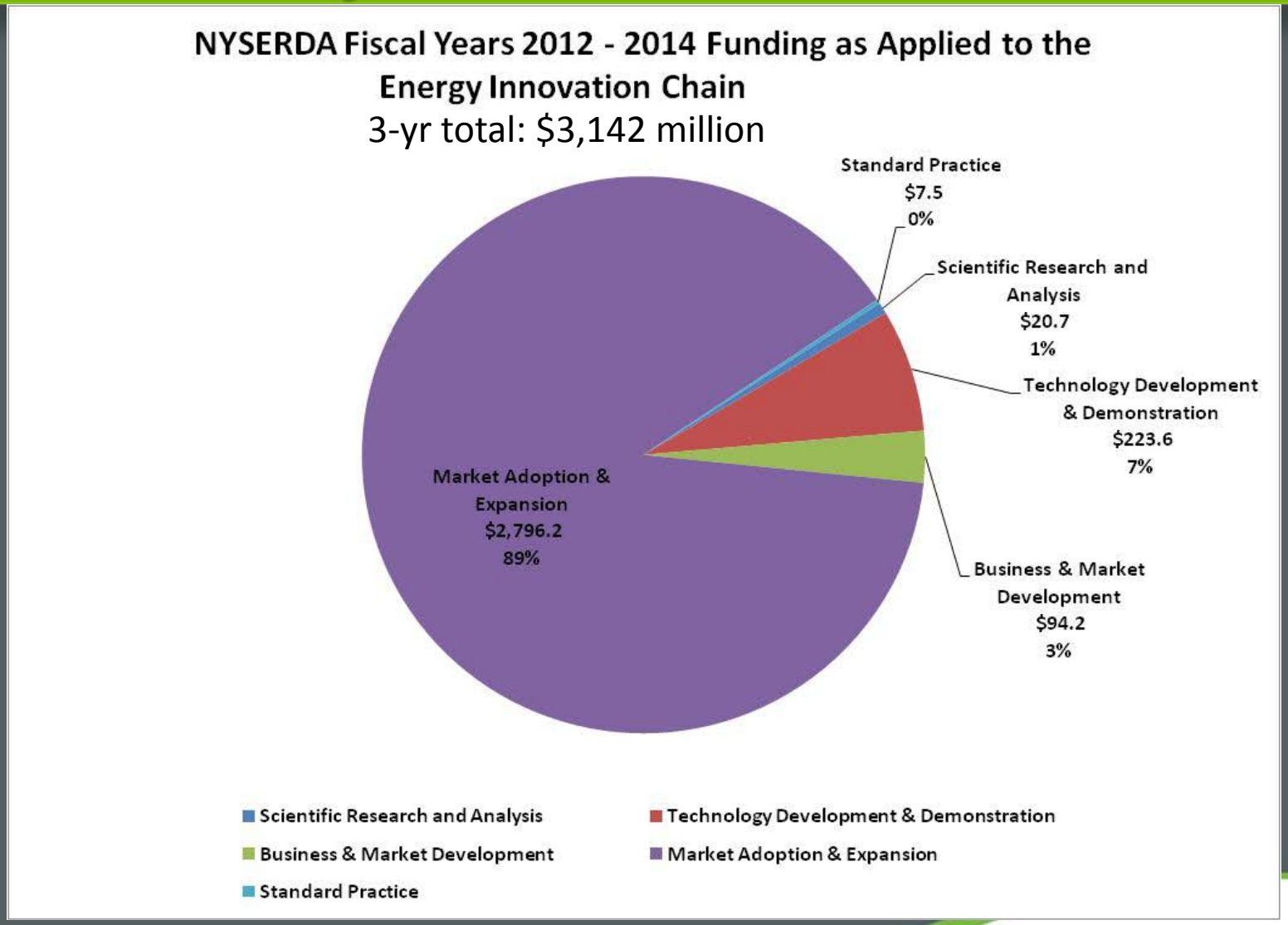
nyserda
Energy. Innovation. Solutions.

Projected Investments



nyserda
Energy. Innovation. Solutions.

Projected Investments



nyserda
Energy. Innovation. Solutions.

Outline

- Relevant programs
  - ✓ Renewable Portfolio Standard (RPS)
  - ✓ Regional Greenhouse Gas Initiative(RGGI)
- Eligibility
- Measurement and Accounting
- RPS and RGGI Relationship
- Complexities/Challenges
  - ✓ Environmental nature
  - ✓ Economic nature

NYS Renewable Portfolio Standard (RPS)

Eligible Bio-fuels

- Projects file for provisional certification of eligibility (prior to bidding a resource/fuel type)
- Projects include NYS RGGI-affected units that co-fire biomass
- Must use fuel from eligible list of fuels
- Adulterated biomass is eligible subject to conditions
- Certification to bid/get paid granted by regulators (PSC)
  - ✓ Provisional Certification (pre-bid)
  - ✓ Operational Certification (pre-payment)
  - ✓ Certification must be maintained

nyserda
Energy. Innovation. Solutions.

NYS RPS

Accounting for bio-fuel

- Operational Certification prior to payment:
  - ✓ Forest Management Plans/Harvest Plans(establishes sustainability)
  - ✓ 3 rd party certification of harvesting (e.g., FSC, SFI, Tree Farm)
  - ✓ Fuel Inspection/quality control procedures
  - ✓ Fuel handling equipment calibration plan
  - ✓ Detailed monthly fuel measurement/accounting included w/contract

    Fuel accounting parameters:
    Btu/moisture/HHV /mass flow, etc.
    Fuel sampling methods/process specification
  - ✓ Pay only for eligible fuel

Reference: NYS RPS Biomass Guidebook

nyserda
Energy. Innovation. Solutions.

Challenge: Bio-fuel Acceptability(RPS)

Adulterated Biomass is eligible but…

- ✓ it must first be converted into bio gas/liquid via gasification, pyrolysis, or esterification
- ✓ technology employed in conversion to energy must produce electricity having emissions < or = to emissions produced using unadulterated feed stocks

nyserda
Energy. Innovation. Solutions.

Market Applicability

Interrelationship with emission markets…

- RPS credit includes emission credits, allowances, etc…
- Emission allowances (SO_2) avoided by combustion of biomass are transferred with RPS credit – retired on behalf of ratepayers
- Plants can periodically suspend delivery of bio-based credits under RPS w/o penalty to apply for RGGI allowance credits
- RGGI-affected plants ***either*** sell renewable energy credits to RPS or use biomass for credit under RGGI CO2 budget program
  - ✓ can not play in both markets

nyserda
Energy. Innovation. Solutions.

NYS Carbon Budget Trading Rules (RGGI)

Eligible Biomass

(similar to RPS for most part)

Affected units can combust eligible biomass and receive credit against CO_2 allowances account (reduces allowance requirement)

- ✓ Sustainably Harvested woody/herbaceous fuels
- ✓ Energy crops
- ✓ Agricultural food/feed crop residues
- ✓ Aquatic plants
- ✓ Unadulterated wood
- ✓ biogas

(Liquid bio-fuels are not eligible)

Lyonsdale Biomass

NYS Carbon Budget Trading Rules (RGGI)

Accounting for Eligible Biomass Fuel

- Generally track Renewable Portfolio Standard rules (Biomass Guidebook)
- Quarterly accounting period
- Fuel accounting parameters:
  - ✓ Btu/moisture/HHV /mass flow
  - ✓ Calculate CO_2 fraction
- Fuel sampling methods/technology consistent with NYS RPS Biomass Guidebook

nyserda
Energy. Innovation. Solutions.

Challenge: Bio-fuel Acceptability (RGGI)

- Sustainable biomass management is challenged as unequal to short-term carbon neutrality…growing source of debate

- Most, including IPCC argue biomass recycles carbon recently absorbed so it is carbon neutral (carbon is merely recycled)…unlike transferring fossil based carbon from geologic reserves that is not re-absorbed

- For those skeptical, the debate on life-cycle analyses (LCA) centers on
  - ✓ cycle time

    100 year permanence easement at parcel level (worst case-NYS)

  - ✓ spatial framework
  - ✓ other factors influencing carbon balance (growth rates, etc…)

nyserda
Energy. Innovation. Solutions.

Challenge: Bio-fuel Acceptability (RGGI)

Stringent criteria for cycle time/permanence may miss the mark… (if appropriate at all!)

- **Alternatives for preserving/using carbon inventory deserve analysis**
  - ✓ Forest health and sustainability are most important when considering increased use of biomass (insect infestation, climate change….).
  - ✓ Carbon **debt** could be repaid from growth spread across a larger landscape rather than only harvested parcel
  - ✓ Rules should recognize and address practical issues to long term compliance (e.g., permanent loss of forest development value)
  - ✓ Landscape level carbon analysis would take broader ecosystem impacts into consideration, and use scientifically based discretion in ruling on issues of enforcement

nyserda
Energy. Innovation. Solutions.

Bio Power - why so complicated

- Eligibility based on fuel type - not emissions profile
- Differing viewpoints on bio fuel acceptability by electric vs. environmental regulators across states
- Inexact science on question of carbon neutrality, accounting practices and application of LCA (primarily RGGI issue)
- Difficult to secure long term supply at predictable prices w/o long-term/stable policies
  - ✓ 10 year RPS contract obligation
  - ✓ 2.5 year out clause for hardship
  - ✓ re-entry into RPS program not guaranteed

nyserda
Energy. Innovation. Solutions.

Wrap Up

- "Acceptable" emissions = those of most "dirty" eligible unadulterated fuel (input base)….a bit imprecise compared to an output based standard
- Accounting/auditing of sustainability is imperfect at best
- "Managing" use of bio-fuels in the programs has a real cost
- Stakeholders are not in agreement on biomass acceptability
- For all the preparatory work (e.g., certification procedures, measurement/accounting processes), NY does not have many operating bio-power facilities to show
- NY is still hopeful… but more work appears necessary

nyserda
Energy. Innovation. Solutions.

Thank You…

Contact: John Saintcross
Program Manager NYSERDA
(518) 862-1090, ext 3384
js1@nyserda.org

nyserda
Energy. Innovation. Solutions.