

# **BEP Public Hearing on Maine's Proposed CO<sub>2</sub> Budget Trading Program Rule (Chapter 156)**

**Presented by: Maine DEP Bureau of Air Quality**

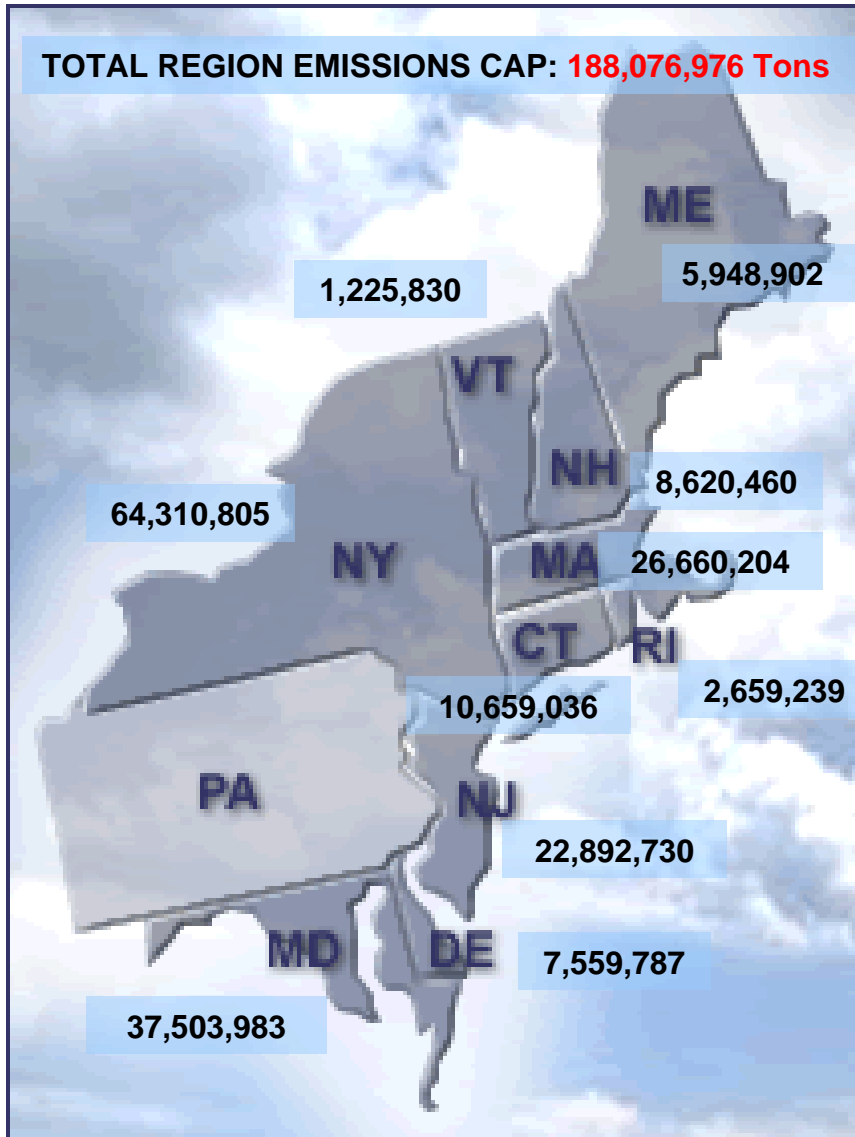
**Location: Holiday Inn - Augusta, Maine**

**Date: September 6, 2007**

# How RGGI Goals were set

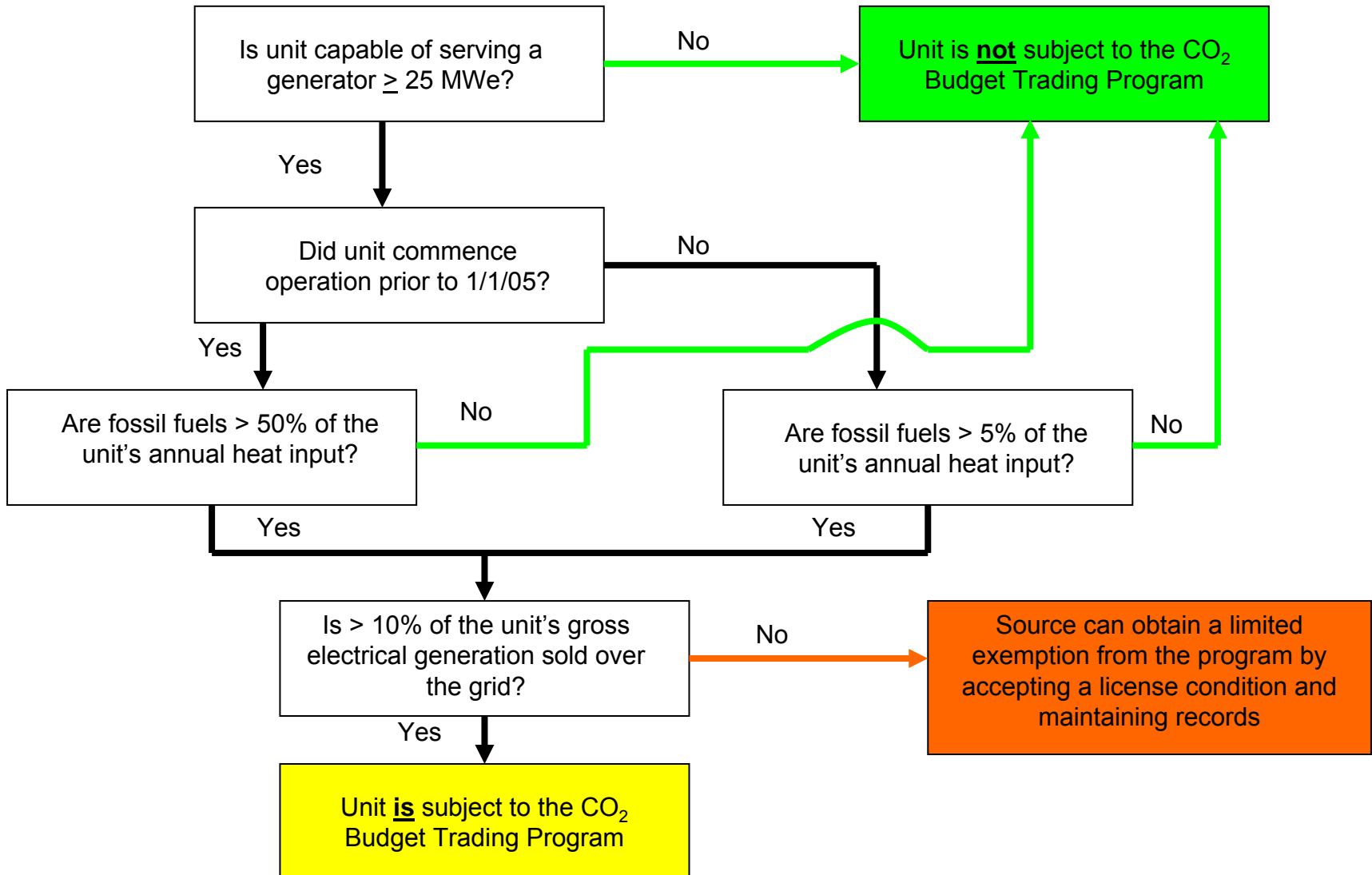
- Determine affected sources
- Establish reduction goals
- Establish state “allowances”
- Develop model rule
- Develop and implement statutes/regulations

# What is RGGI?



- Effective 2009
- 35% reduction CO<sub>2</sub> from Business As Usual<sup>2</sup> expected
- Covers Electric Generators
  - Fossil Fuel-fired
  - 25 MW or greater
  - >10% annual gross sales to grid
- Purpose
  - Reduce Greenhouse gases
  - Promote energy efficiency & low carbon resources
  - Establish a carbon price
  - Encourage innovative technologies
  - Establish a national model

# CO<sub>2</sub> Budget Unit Applicability Flow Chart



# Biomass and Fossil Fuels

- Fossil Fuel
  - natural gas, petroleum, coal, or any form of solid, liquid or gaseous fuel derived from such materials
- Biomass
  - All biomass is exempt from the definition of fossil fuel
  - “Eligible biomass” (sustainably harvested biomass) is only relevant when calculating a RGGI unit’s compliance obligation

# Comparison of Applicability Categories

- Commenced Operation prior to 1/1/05
  - Unit is a RGGI unit if:
    - >50% Fossil Fuel;
    - $\geq 25$ MW; and
    - >10% sales to grid
  - Once in, always in
  - If in, source can deduct from its compliance obligation the CO<sub>2</sub> emissions associated with sustainably harvested biomass
  - If in and biomass is not sustainably harvested, all CO<sub>2</sub> emissions must be covered
  - No existing Maine biomass units are subject to RGGI
- Commenced Operation on or after 1/1/05
  - Unit is a RGGI unit if:
    - >5% Fossil Fuel;
    - $\geq 25$ MW; and
    - >10% sales to grid
  - Once in, always in
  - If in, source can deduct from its compliance obligation the CO<sub>2</sub> emissions associated with sustainably harvested biomass
  - If in and biomass is not sustainably harvested, all CO<sub>2</sub> emissions must be covered
  - No biomass units have been built in Maine since 1/1/05 that are subject to RGGI

# Why the different fossil fuel applicability triggers?

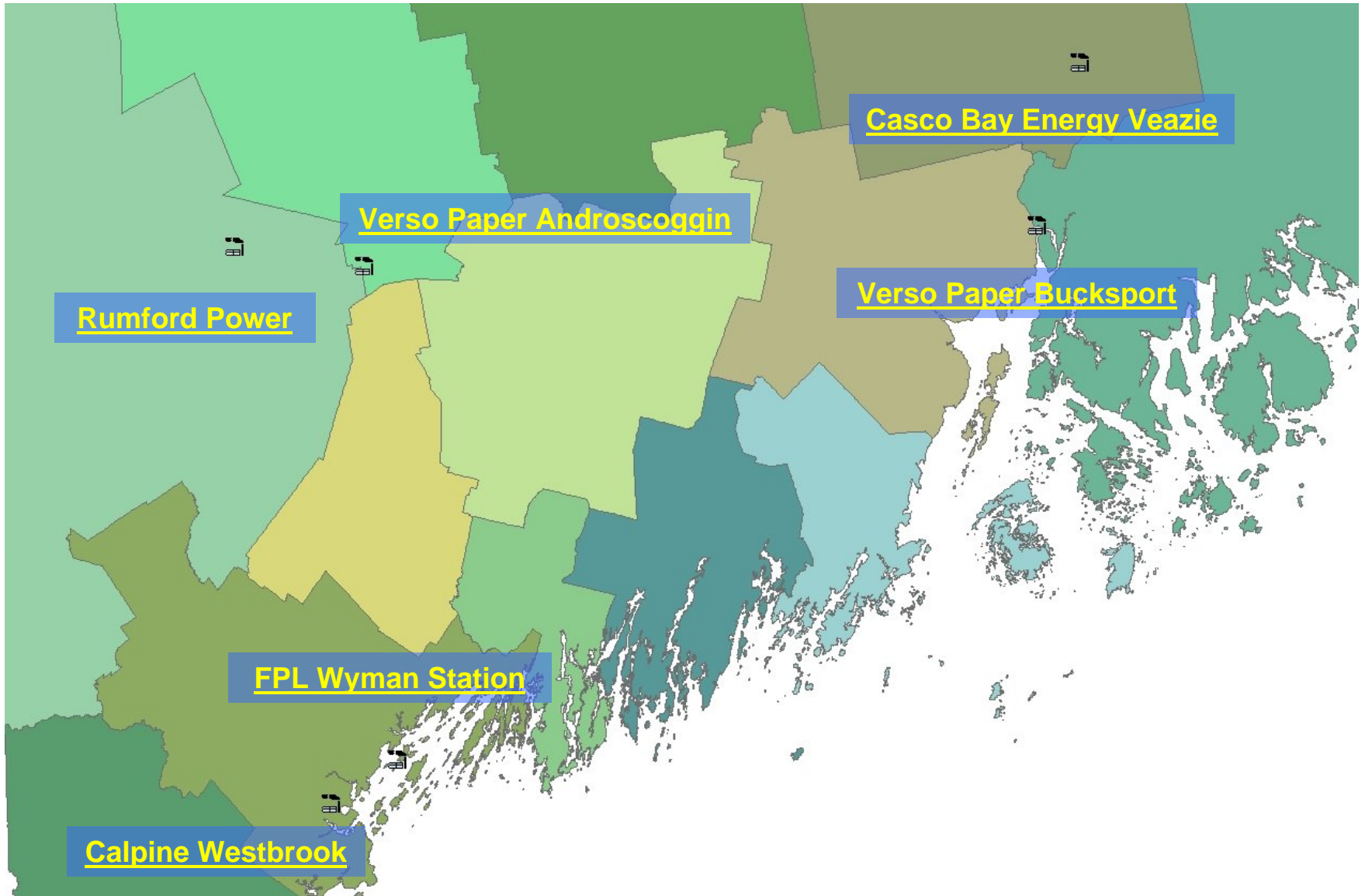
## >50% Fossil Fuel Trigger

- Designed to keep existing (prior to 1/1/05) biomass fired utilities and industrial units out of a program designed for fossil fuel fired utility units
- Most existing biomass fired utility units are already restricted from firing more than 10% fossil fuels by license
- The 50% trigger provides an incentive for existing industrial units to remain primarily biomass fired

## >5% Fossil Fuel Trigger

- Encourage new units (post 1/1/05) to maximize the use of biomass fuels for power generation

# Maine RGGI Sources



# Emission Reductions

- Total RGGI CO<sub>2</sub> allocation: 188,076,976
- Total Projected CO<sub>2</sub> reductions: 65 million tons
  
- Maine allocation: 5,948,902
- Maine Projected CO<sub>2</sub> reductions: 2.1 million tons

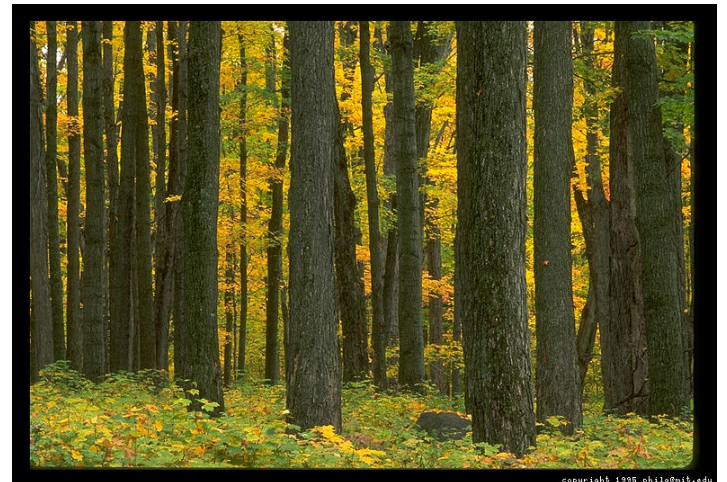
Note: Projected CO<sub>2</sub> reduction based on 10% reduction goal plus 25% reduction from offsetting Business As Usual growth

# RGGI Flexibility



***Methane  
Capture from  
Farms***

***Convert Land  
to Forest***



# RGGI Flexibility

***SF<sub>6</sub> Gas Leak  
Prevention in  
Electricity  
Distribution***



***Landfill Gas  
Capture at Small  
Landfills***

# RGGI Flexibility



## *And End-Use Energy Efficiency Projects*

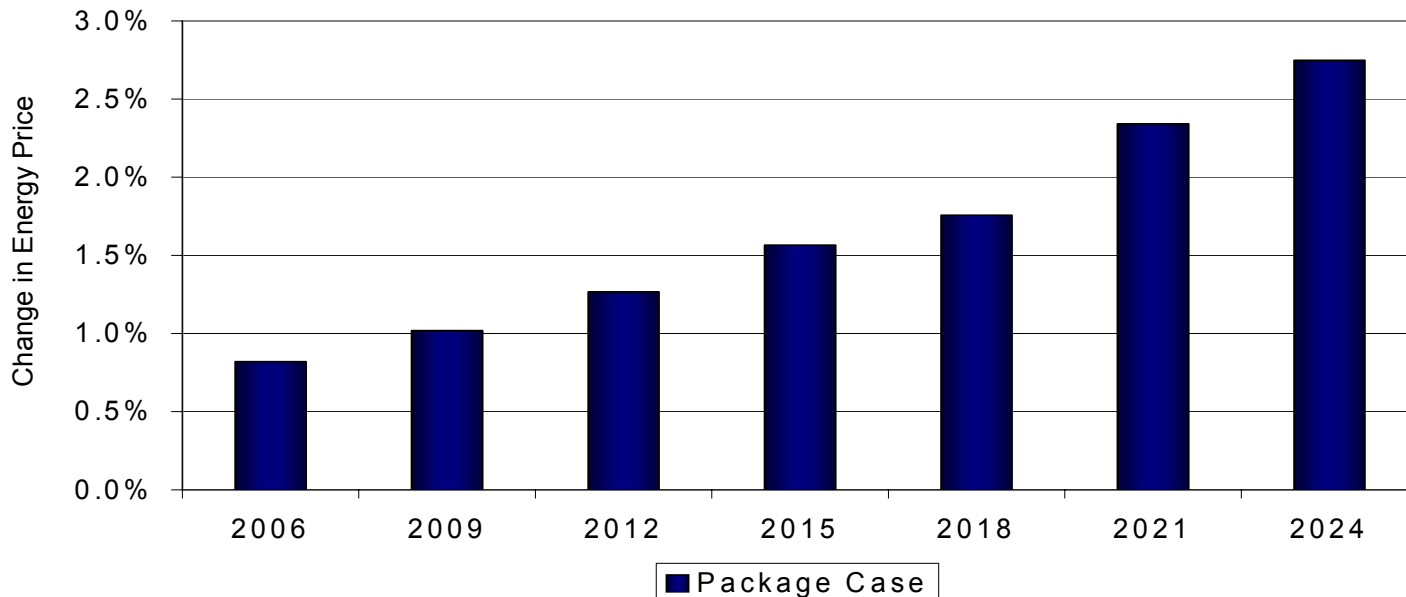
- Additional offset project categories
  - Forest management
  - Prevention of forest land conversion

# Expected Environment & Energy Effects of RGGI

- Start region on a path to lowering emissions of CO<sub>2</sub>
- Reduce dependence on foreign sources of energy
- Promote cleaner forms of electric generation
- Achieve lowest cost reductions of CO<sub>2</sub> emissions
- Encourage new investment in alternative energy and energy efficiency projects
- Stimulate the development of new technologies
- Model for national program

# Expected Cost Effects of RGGI

- Without energy efficiency, energy costs in the RGGI region are expected to increase .8% to 2.75%
- Without energy efficiency mitigation, projected Household Bill will increase \$3 - \$22 annually
- Increases in Energy Efficiency will mitigate cost and provide a net dollar benefit to energy consumers. PUC and energy experts believe energy efficiency investment can eliminate price impacts.



# Potential Emissions Leakage

## Effects of RGGI

- Leakage (Emissions Leakage)
  - “Emissions leakage” is the concept that there could be a shift of electricity generation from capped sources subject to RGGI to sources not subject to RGGI.
  - Because RGGI is being implemented in a competitive generation market, generation may shift to presumably cheaper and higher emitting fossil fuel-fired generation not subject to a carbon cap.
  - Leakage will be monitored through the first compliance period and subsequently an analysis with recommendations will be evaluated in 2012.

# Maine RGGI Process

- Legislation enacted
- Rulemaking
  - Solicited public input on model rule
  - Posted to Board of Environmental Protection
  - Hold Public Hearing
  - Revise rule
  - BEP adopts rule

# Components of Maine's CO<sub>2</sub> Budget Trading Program

- [Chapter 156 – CO<sub>2</sub> Budget Trading Program](#)
- Chapter 157 – Regional Greenhouse Gas Initiative Waiver
- Chapter ( \_ \_ \_ ) – Auction Rule

# Maine's Proposed CO<sub>2</sub> Budget Trading Program Regulations

- Maine Specific Features
- Maine's CHP Incentive
- CO<sub>2</sub> Allowance Allocations
- Source Obligations

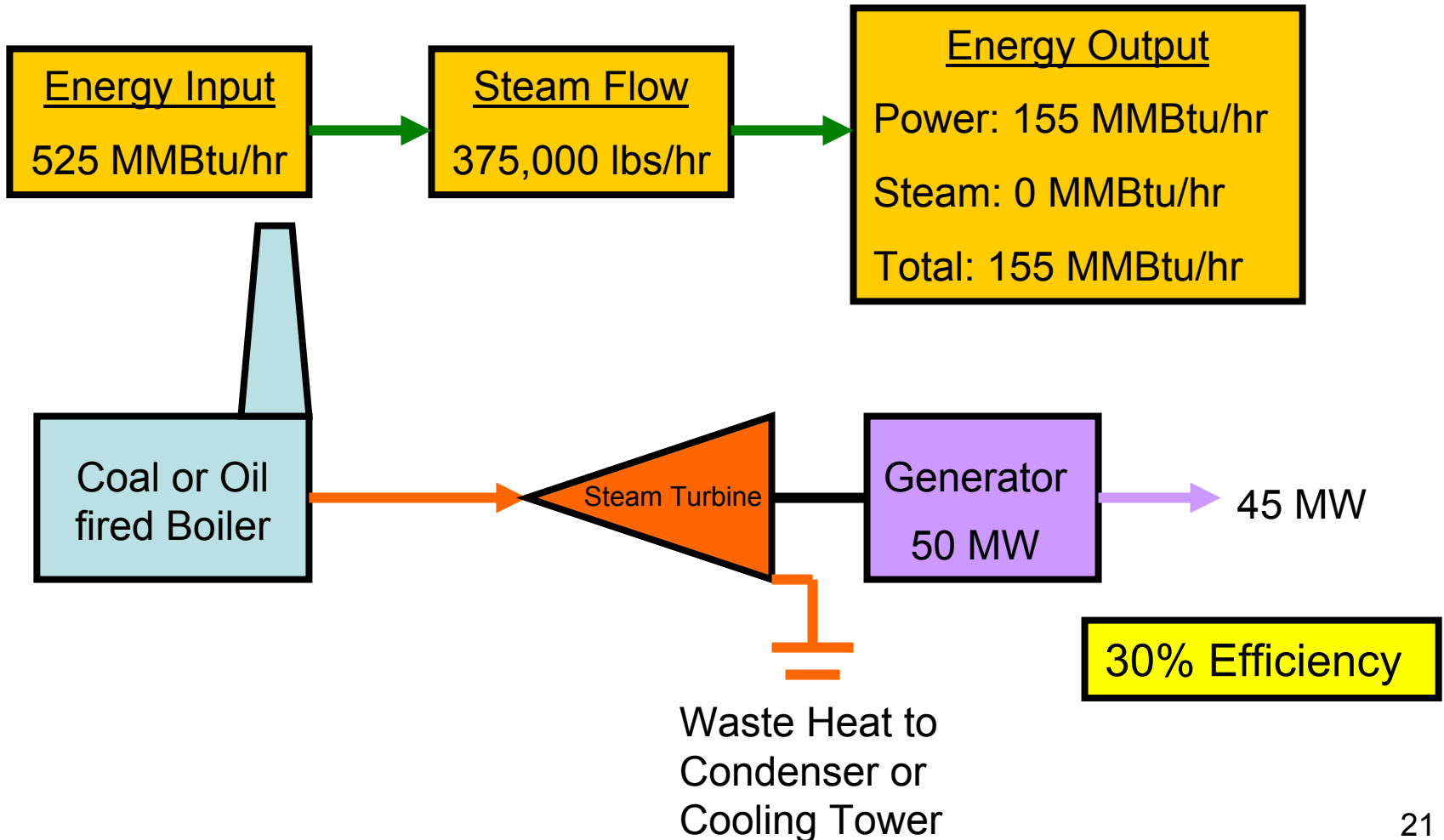
# Maine Specific Features

- Combined Heat and Power
- 10% calculation for exemption
- Rule Organization
- Definitions
  - Clarifications
  - Additions

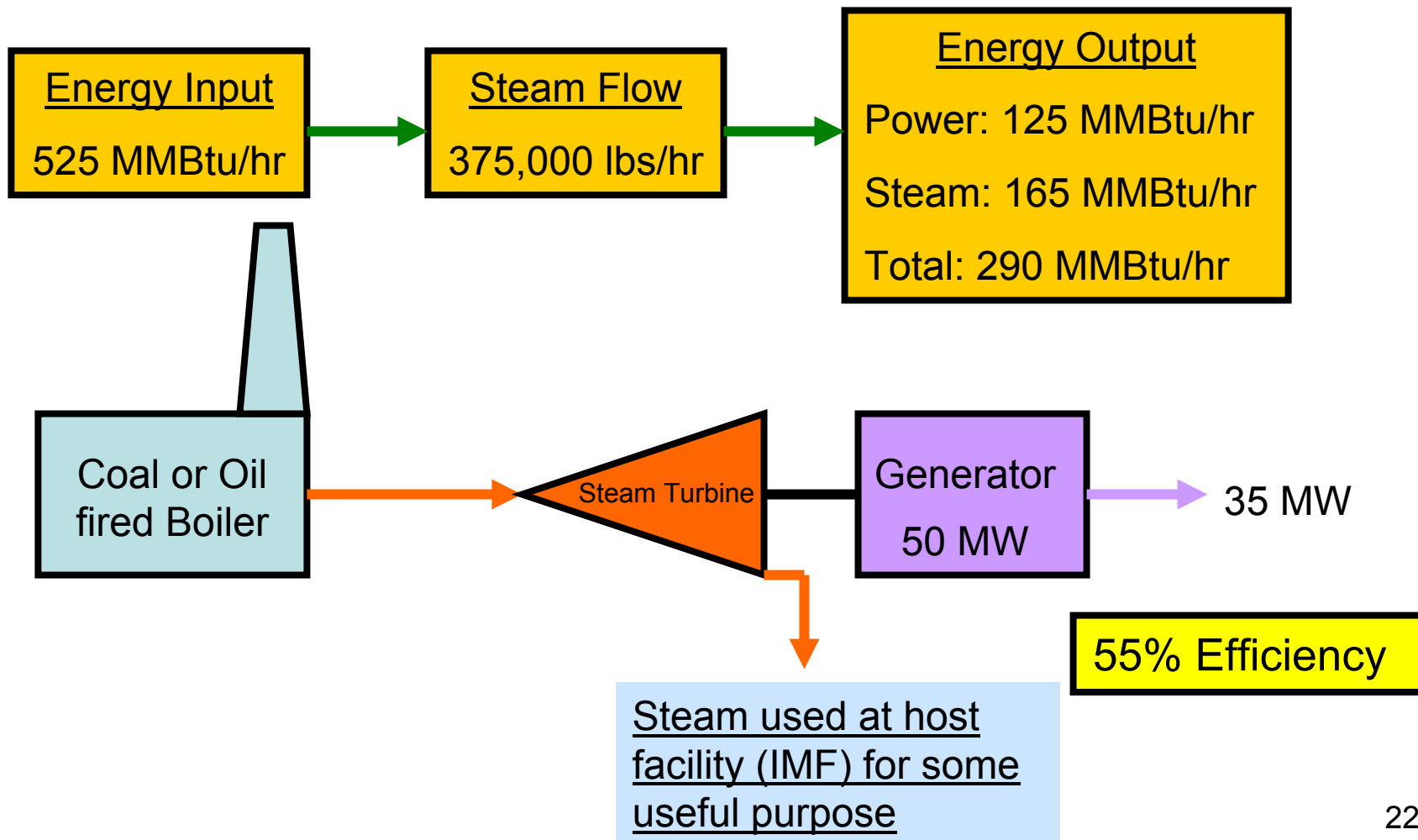
# Maine CHP Incentive

- Combined Heat & Power (CHP) unit at an Integrated Manufacturing Facility (IMF)
  - CHP is
    - More efficient use of the fuel
    - Steam used beyond power generation ( $\geq 10\%$ )
  - IMF is
    - Air Licensed source
    - Is a RGGI source with CHP
    - Routinely produces one or more products

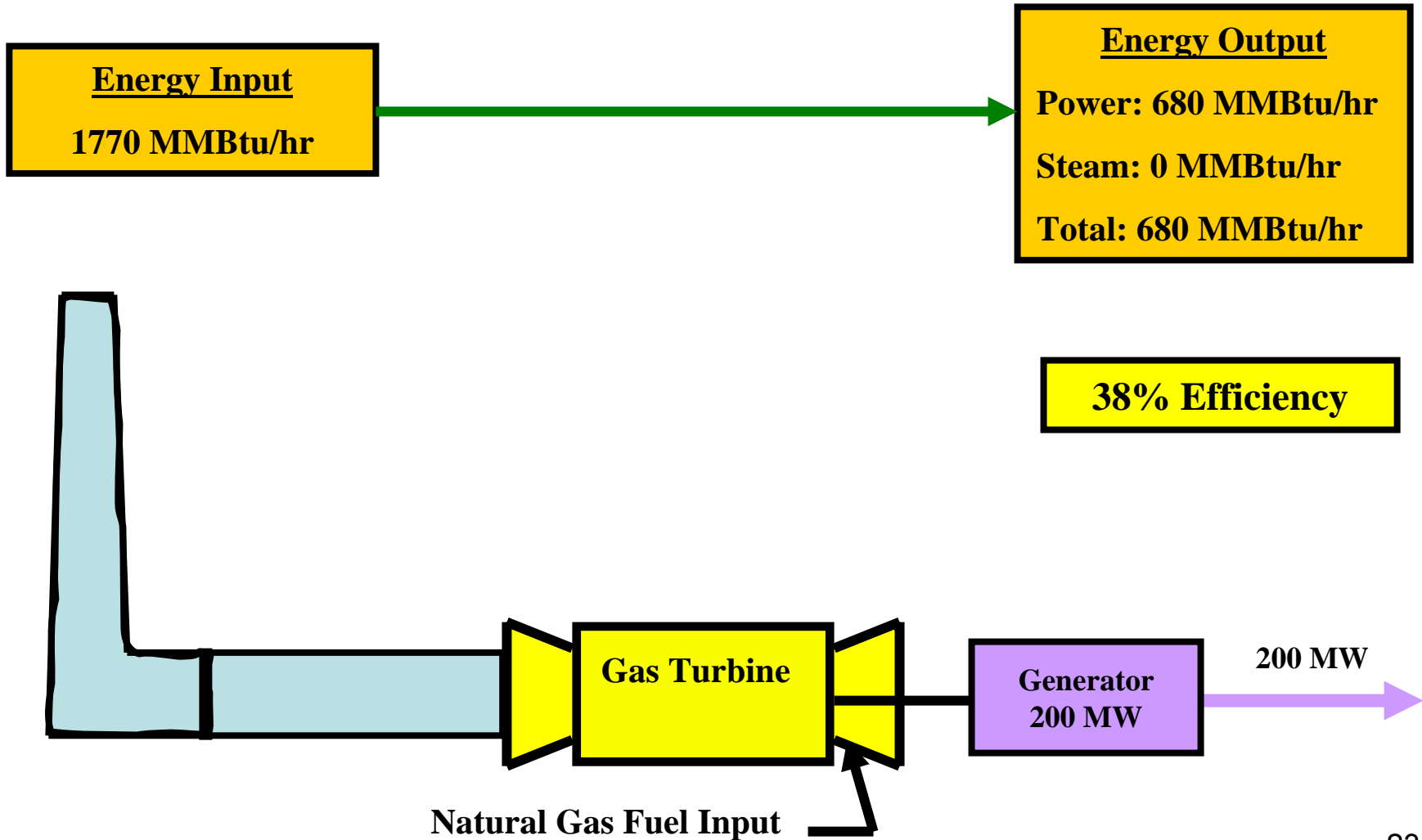
# Traditional Power Plant



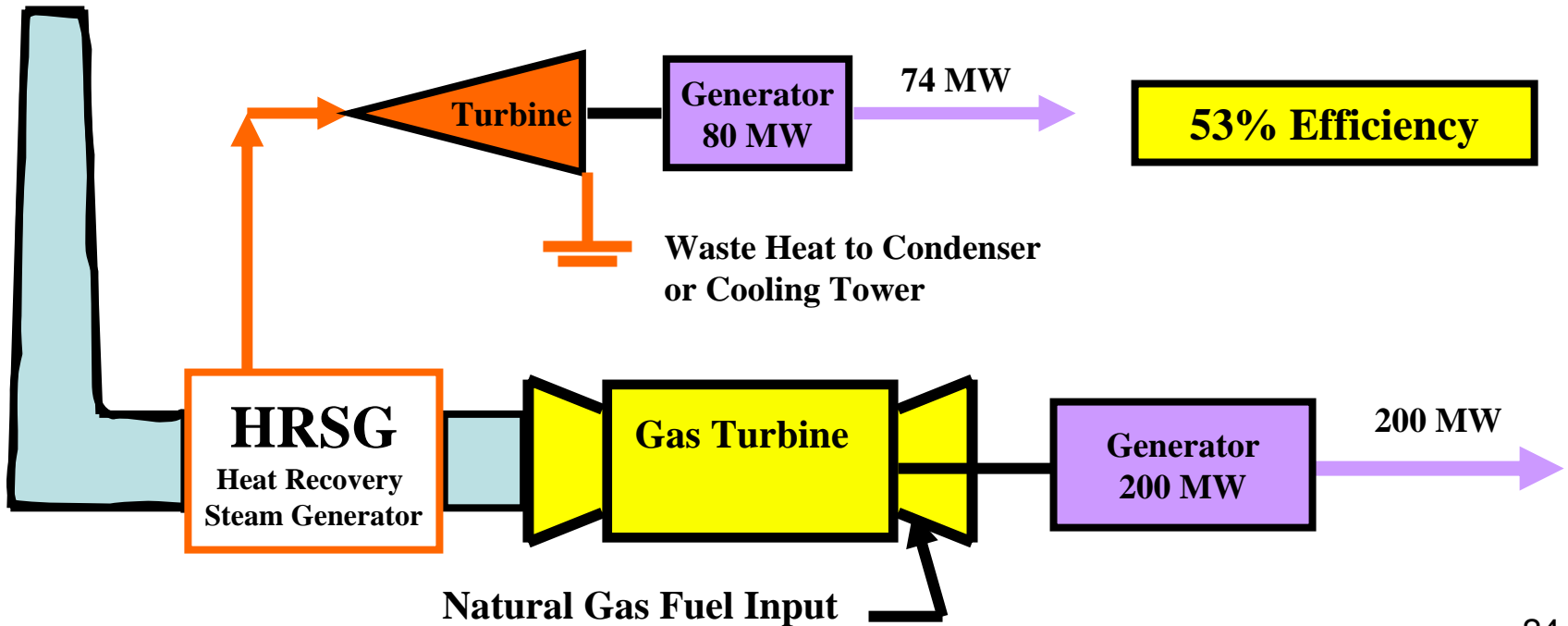
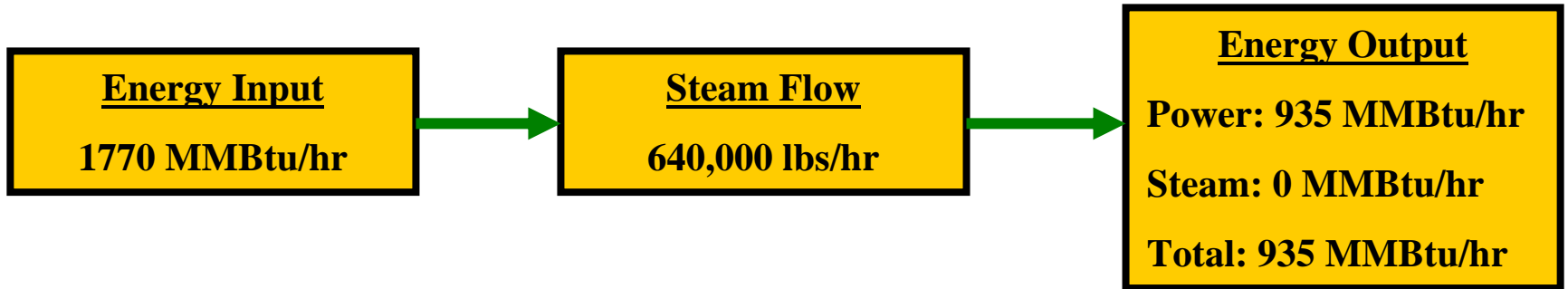
# Combined Heat & Power: Traditional Power Plant



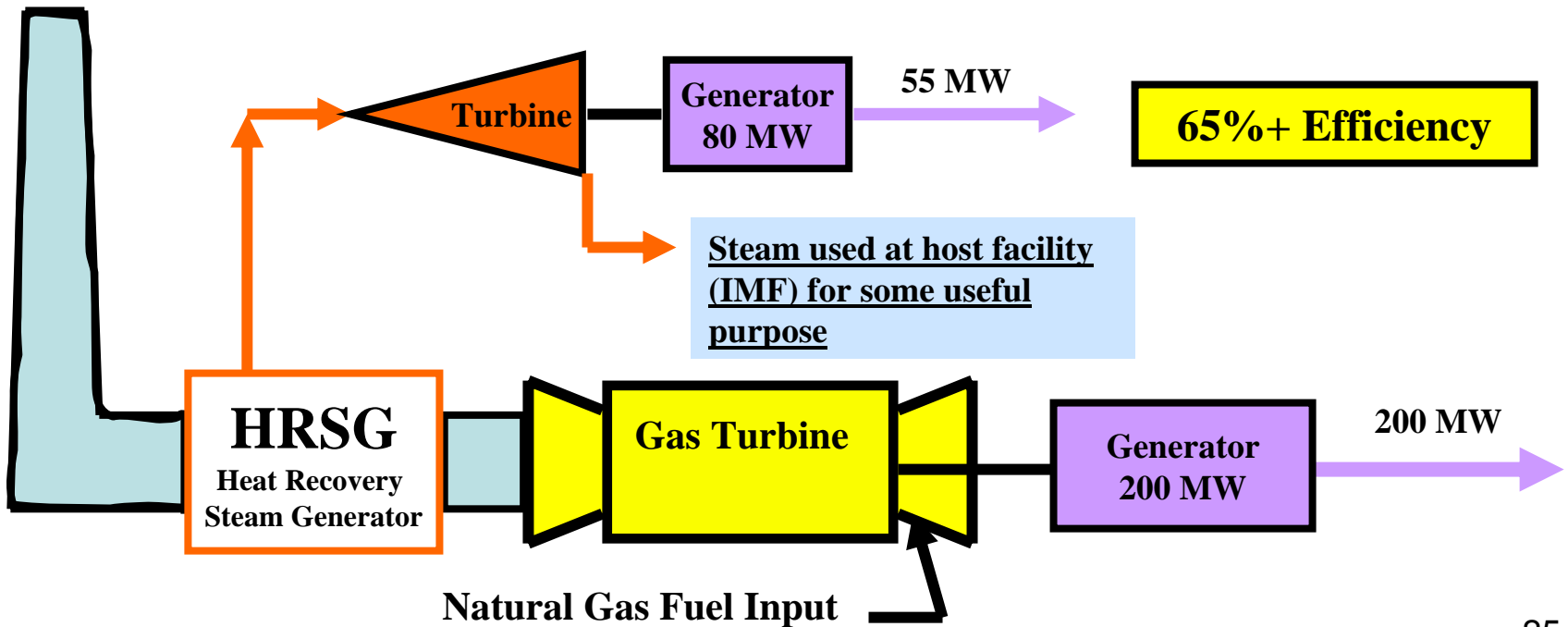
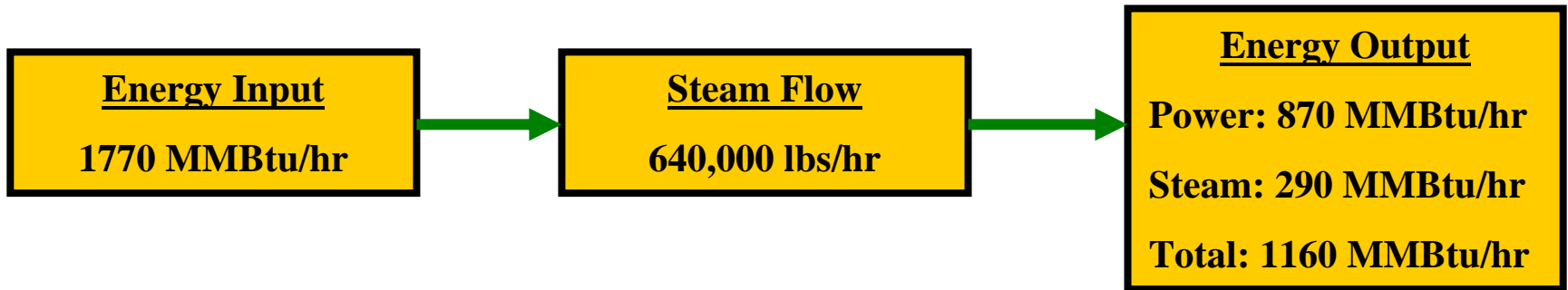
# Simple Cycle Gas Turbine



# Combined Cycle Gas Turbine



# Combined Heat & Power



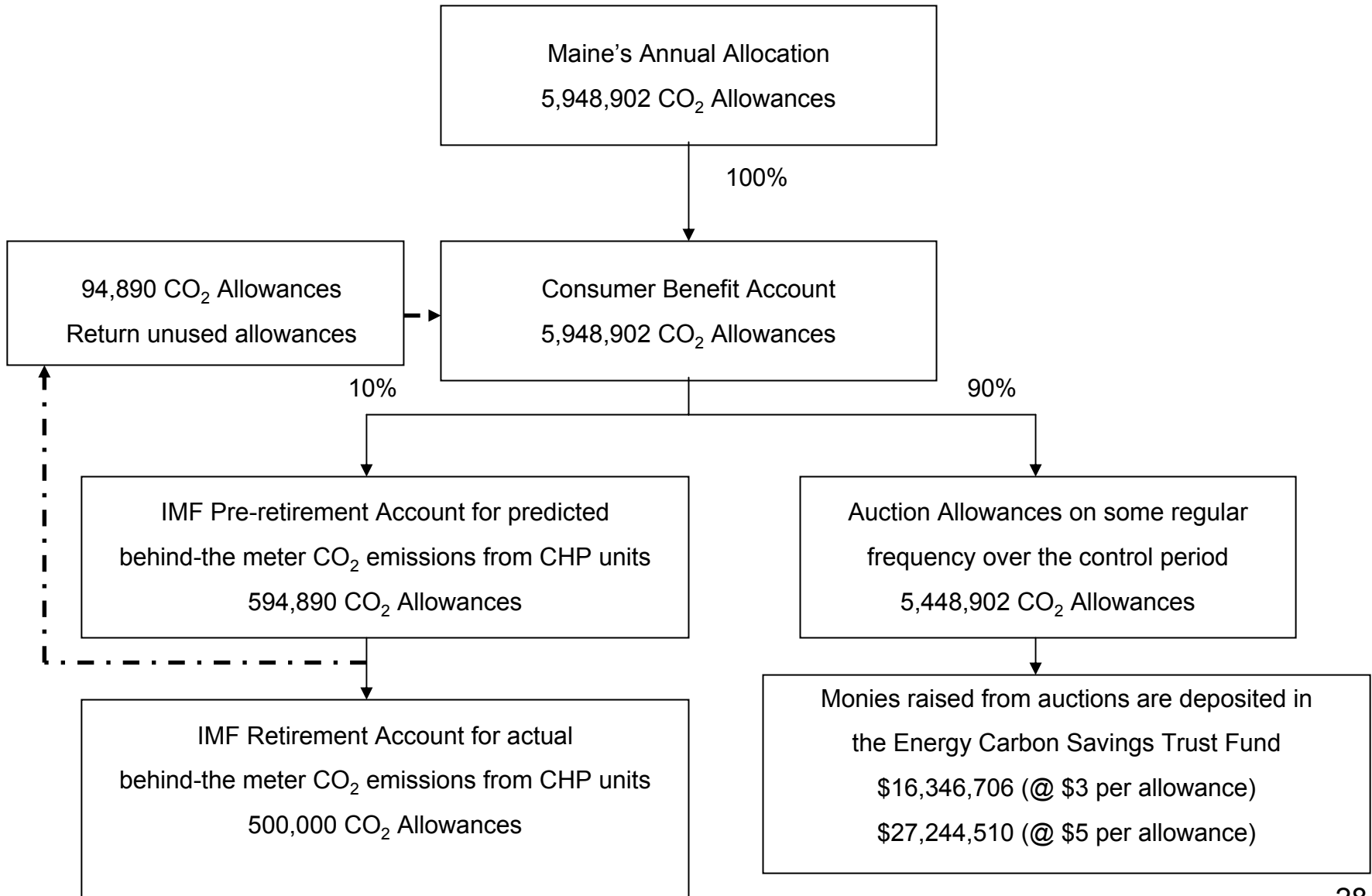
# CO<sub>2</sub> Allowance Allocations

- Maine's CO<sub>2</sub> Budget
- Maine's CO<sub>2</sub> Allowances
- Early CO<sub>2</sub> Reduction Incentive

# Maine's CO<sub>2</sub> Budget

- Six Year Stabilization Period:  
2009 thru 2014 = 5,948,902 CO<sub>2</sub> allowances per year
- Four Year Reduction Period:  
2015 = 5,800,180 CO<sub>2</sub> allowances  
2016 = 5,651,458 CO<sub>2</sub> allowances  
2017 = 5,502,736 CO<sub>2</sub> allowances  
2018 = 5,354,014 CO<sub>2</sub> allowances  
(10% reduction from stabilization period budget)

# Maine's CO<sub>2</sub> Allowances



# Early CO<sub>2</sub> Reduction Incentive

- Affected sources may take credit for early reductions in CO<sub>2</sub> emissions occurring during the early reduction period (2006, 2007, & 2008)

# CO<sub>2</sub> Budget Source Obligations

- Select a CO<sub>2</sub> Authorized Account Representative
- Obtain a CO<sub>2</sub> Budget Source License
- Monitor
- Submit Compliance Reports
- Obtain CO<sub>2</sub> Allowances
- Surrender CO<sub>2</sub> Allowances

# Additional Material

- Want to learn more?
  - [www.maine.gov/](http://www.maine.gov/)
    - Chapter 156 – [www.maine.gov/dep/air/regulations/proposed.htm](http://www.maine.gov/dep/air/regulations/proposed.htm)
    - Chapter 157 - [www.maine.gov/dep/air/regulations/proposed.htm](http://www.maine.gov/dep/air/regulations/proposed.htm)
    - LD1851 - <http://janus.state.me.us/legis/LawMakerWeb/summary.asp?ID=280024997>
    - Climate Action Plan - [www.maine.gov/dep/air/greenhouse/index.htm](http://www.maine.gov/dep/air/greenhouse/index.htm)
  - [www.rggi.org](http://www.rggi.org)
    - MOU – [www.rggi.org/docs/mou\\_final\\_12\\_20\\_05.pdf](http://www.rggi.org/docs/mou_final_12_20_05.pdf)
    - Model Rule - [www.rggi.org/docs/model\\_rule\\_corrected\\_1\\_5\\_07.pdf](http://www.rggi.org/docs/model_rule_corrected_1_5_07.pdf)
  - [www.muskie.usm.maine.edu](http://www.muskie.usm.maine.edu)
    - Muskie Primer – [www.muskie.usm.maine.edu/Publications-A\\_Primer\\_for\\_Maine.pdf](http://www.muskie.usm.maine.edu/Publications-A_Primer_for_Maine.pdf)
  - [www.epa.gov/climatechange](http://www.epa.gov/climatechange)
  - [www.ipcc.ch](http://www.ipcc.ch)
  - [www.nrcm.org/sea\\_level\\_rise.asp](http://www.nrcm.org/sea_level_rise.asp)
  - [www.pewclimate.org](http://www.pewclimate.org)