

# TN Governor's Energy Policy Task Force

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December 16, 2008  
Nashville, Tennessee

## Clean Energy Work Group Recommendations

Miles Burdine, Kingsport Chamber of Commerce  
(Chair, TN Clean Tech Work Group)

Dr. Jonathan Raab, Raab Associates & MIT  
(Facilitator and Consultant to TN Task Force)

# Clean Energy Tech Work Group: Members

- Governor Appoints Clean Tech Work Group (7/16)
  - Chair, Miles Burdine, Kingsport Chamber of Commerce\*
  - Commissioner Matt Kisber (and Ryan Gooch), TECD
  - Dana Christensen, ORNL
  - Jack Holder, TN Valley Industrial Committee
  - Kalee Kreider, Office of Honorable Al Gore
  - John Noel, Southern Alliance for Clean Energy
  - Joe Hoagland, TVA

\*Miles Burdine additionally represents the TN Chamber of Commerce & Industry and the TN Business Roundtable

# Clean Energy Tech Work Group: Process to Date

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- Governor's Summit on Clean Energy Technology: Oct. 14-15
  - Town Hall meeting lunch at end of Summit moderated by Commissioner Kisber attended by over 200 with over 20 offering comments
- Work Group meetings: 10/15, 11/13, 12/3
- Public listening session: Burdine, Vandenberg, Raab- 10/3: a dozen presenters

# Clean Energy Tech Work Group

## Definitions

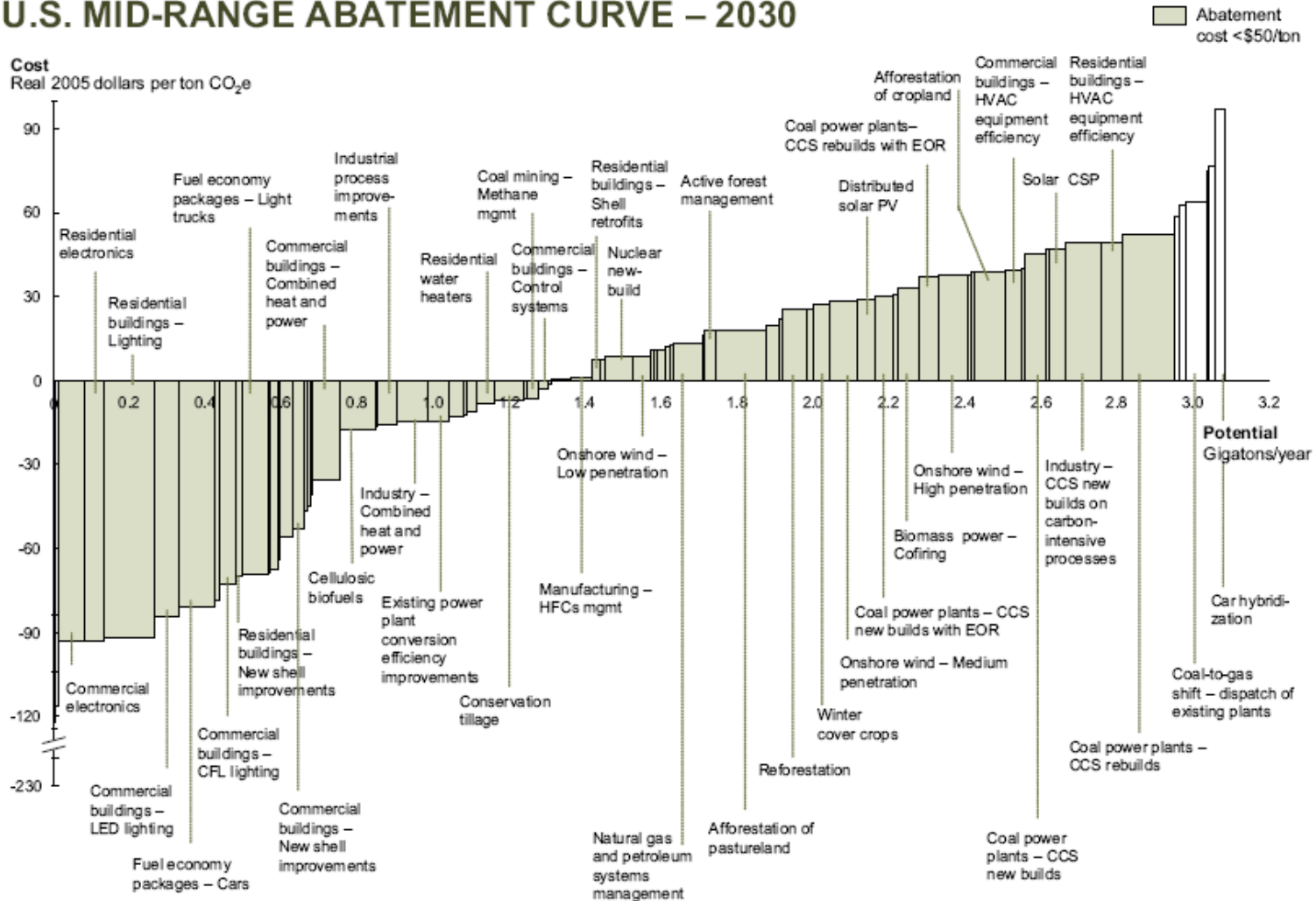
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- **Clean-Energy Technologies** include energy efficiency and conservation, renewable energy\*, alternative fuels (e.g., biofuels) and distributed generation (e.g., combined heat and power); and for certain TN programs and policies may include other low-greenhouse gas emitting sources such as nuclear and potentially “clean” fossil fuels (where carbon is sequestered)

\*”Renewables” include solar, wind, sustainable biomass, geothermal, landfill gas, and certain hydro”

# Opportunities

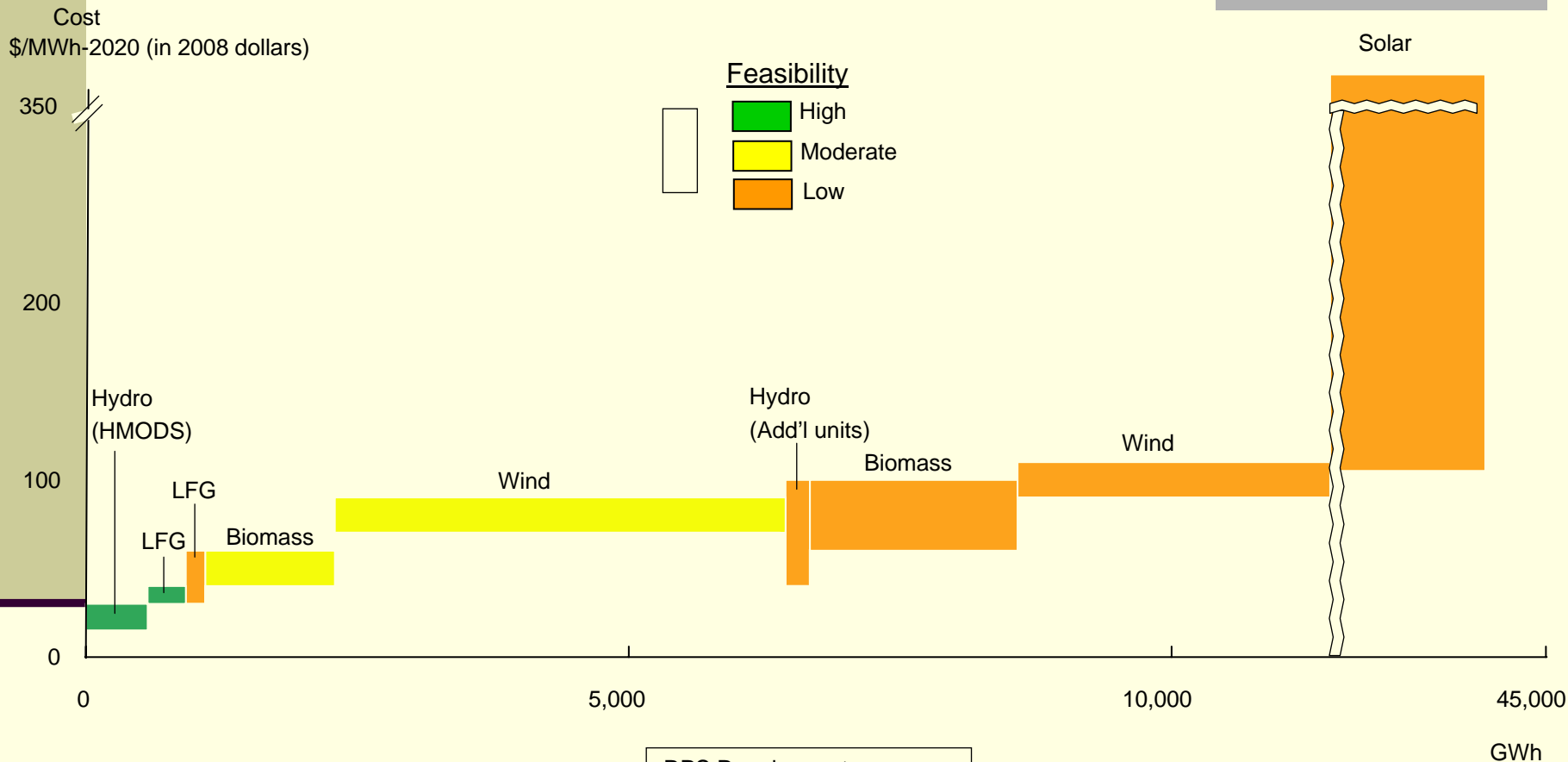
## U.S. MID-RANGE ABATEMENT CURVE – 2030



Source: McKinsey analysis

# Potential “Traditional” Renewables Supply In Valley

TVA service area renewables supply curve (2020)



RPS Requirements  
 Mild RPS: 13,600 GWh  
 Medium RPS: 20,400 GWh  
 Stringent RPS: 27,200 GWh

*Developed using McKinsey & Company proprietary tools*

# Clean Energy Tech Work Group

## Definitions

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- **Clean Tech Jobs** include direct (manufacturing, installing, servicing), indirect/supporting (e.g., hardware stores and other suppliers), and induced (from citizens and businesses respending income from direct/indirect jobs and from energy bill savings in TN economy)
- **Clean Tech Program or Policy results in jobs from**
  - Clean tech manufacturing in TN regardless of whether technology is installed in TN, or
  - Installing and servicing clean tech in TN regardless of where manufactured

# Clean Energy Tech Summit: Key Observations – What We Heard?

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- “Clean Tech is the greatest opportunity of a generation – opportunity disguised as an insoluble problem.”
- “No silver bullet – TN needs a diverse portfolio of energy resources – but energy efficiency should be the highest priority.”
- “Tennessee can lead the U.S. in ‘sustainable mobility’...develop an alternative fuels corridor.”
- “Clean energy is not about a lack of technology or capital, but a lack of public policy which brings both together.”
- “Education and training are key to Tennessee’s long-term success in Clean Technology”

# Clean Energy Tech Work Group

## Recommendations: Our 4 Strategies

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1. Growing Clean Energy Tech businesses in Tennessee
2. Educating and training a Clean Energy Tech citizenry and workforce
3. Enabling Clean Energy Tech installations and use
4. High-level energy leadership with adequate staff

# Strategy #1: Growing Clean Energy Tech Businesses in TN

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A. Build on and enhance the following pre-existing TN Clean Energy Tech related initiatives:

- Green Energy Tax Credit
- Green Island Corridor Program
- Small Business Energy Loan Program
- Clean Energy Technology Grant Program
- Biodiesel Infrastructure Grants

# Strategy #1: Growing Clean Energy Tech Businesses in TN

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- B. The state should classify the Clean Energy Tech sector as part of an “Emerging Industry” in Tennessee
  - Increases visibility of Clean Energy Tech sector
  - Qualifies business for various incentives, e.g., TN Jobs Tax Credits (\$2,000/\$4,500 per job)

# Strategy #1: Growing Clean Energy Tech Businesses in TN

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- C. The state should spearhead innovative Clean Tech research, design, and development (RD+D), by seeking collaborations with ORNL, universities, TVA, industry (e.g., Sharp, auto industry), and the state
  - The Colorado Renewable Energy “Collaboratory” combines Nat’l Renewable Energy Lab, universities, industry, and state government for new research in renewable energy
    - Current projects include a biofuels and biorefining lab, and 2<sup>nd</sup> generation solar energy conversion

# Strategy #1: Growing Clean Energy Tech Businesses in TN

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D. Tennessee should provide additional “early-stage” Clean Tech business incentives, such as

- Fellowship program for experienced entrepreneurs seeking to move into Clean Energy industry
- Early-stage seed-capital for development of new Clean Tech businesses or projects
- Massachusetts Green Jobs Act (2008), established the MA Clean Energy Center, with \$58 million over 5 years offers funding for
  - Clean Energy start-ups;
  - Clean Energy Fellowship program, for experienced MA entrepreneurs seeking to move into Clean Energy industry
  - Clean Energy education and job training at universities and community colleges, and to provide low-income job training

# Strategy #1: Growing Clean Energy Tech Businesses in TN

- Federal stimulus package—clean energy tech jobs and infrastructure
  - Support and help shape portions of federal stimulus package focused on clean energy tech where possible
  - Direct clean energy tech related stimulus dollars to support the initiatives recommended by this (and the other) Work Groups , to the extent TN has discretion
  - Take advantage of any opportunities to upgrade transmission and distribution infrastructure to better facilitate the development of renewable energy resources and distributed generation, and smart grids and meters.

# Strategy #2: Clean Energy Tech Education & Training

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- A. Develop a graduated, multidisciplinary, fully-integrated state energy curriculum for K-12 students
- B. Expand public education to years 13-14, with a focus on Clean Energy Tech and supporting trades (e.g., welders, electricians, instrument technicians) related education and skills
- C. Integrate Clean Energy Tech related courses and areas of focus (energy in buildings and automobiles) at colleges and universities

# Strategy #2: Clean Energy Tech Education & Training

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- C. Develop certificate-based trainings at community colleges (e.g. HERS raters, energy building code inspectors, energy efficiency & solar installers)
- D. Enable TN Workforce Development Board to oversee advances in training
- E. Seek partnerships between businesses and schools to sponsor and fund targeted trainings

# Strategy #3: Enabling Clean Energy Tech Installations and Use <sup>17</sup>

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- A. Create a statutory category for Clean Energy Tech similar to “certified pollution control equipment”
  - Identify types and criteria for qualifying equipment (e.g., energy efficiency and on-site renewables)
  - Make eligible for
    - Franchise tax base exemptions
    - Industrial machinery credits
    - Sales and use tax credits

# Strategy #3: Enabling Clean Energy Tech Installations and Use <sup>18</sup>

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## B. Electric vehicle recharging infrastructure\*:

- Commuters--install electric vehicle recharging at park-and-ride lots and public parking; and encourage at large businesses
- General Travel--expand Green Corridors program to include rapid electric recharging
- Home Recharging—require proper outlets in new homes (e.g., garages and car-ports) through building codes

\* Recharging infrastructure should be PV-assisted where feasible

# Strategy #3: Enabling Clean Energy Tech Installations and Use <sup>19</sup>

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- C. In anticipation of universal installation of smart meters and implementation of “time-sensitive” pricing
  - Need web connection in every home
  - TN can partner with distributors/TVA and internet/phone telecommunication companies to facilitate development of necessary communications networks

# Strategy #3: Enabling Clean Energy Tech Installations and Use 20

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- D. Streamline and expedite siting and permitting for renewables\*, CHP, and efficient buildings
  - Use dedicated TDEC/TECD “Energy Team” to help developers navigate state and local processes
  - Consider establishing “fast track” zones for certain parts of the state for specific resources (e.g., wind in East TN)

\*TVA recently released RFP for the development of 2,000 MW of renewable energy resources

# Strategy #3: Enabling Clean Energy Tech Installations and Use <sup>21</sup>

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- E. Encourage the development of interconnection standards for customer-sited renewables and distributed generation
  - 37 states have standardized interconnection requirements (engineering, cost, and timing)
  - TVA has standards that aren't uniformly implemented by distributors
  - State should work with TVA and distributors to facilitate feasible and equitable standards

# Strategy #3: Enabling Clean Energy Tech Installations and Use

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## F. Support Clean Energy Tech related recommendations of Residential Work Group

- Sales tax exemptions for qualifying efficiency equipment, renewables, and advanced vehicles
- Building codes (residential and commercial)
- Building rating and labeling

# Strategy #3: Enabling Clean Energy Tech Installations and Use 23

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## G. Encourage Renewable Portfolio Standard

- 29 states require increasing % of electricity from qualifying renewables
- TN doesn't regulate TVA or distributors
- So needs to be federally mandated or voluntary agreement
- TN should explore voluntary agreement w/TVA

## H. Evaluate a Clean Vehicle Standard for Tennessee

- California Standard (implemented 2008) phases-in standards over 10 years, with goal of reducing GHG intensity of transport fuels by 10% by 2020
  - CA standard is based on a carbon-equivalent per gallon basis, that encourages lower GHG intensity fuels (e.g. biofuels, electricity)

# Strategy #4: Leadership and Staffing

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- TN businesses and citizens spending over \$20 billion/year on energy (state buildings and fleets \$150-200 million)
- Clean Tech WG (and Residential and LBE WGs) recommendations should reduce energy usage, expenditures and emissions--and produce jobs
- Need on-going state involvement to properly implement all WG recommendations
- Must have strong leadership, high visibility, and adequate staffing