



Draft Renewable and Clean Energy Assessment

TVA 2007 Strategic Plan

ENVIRONMENTAL STRATEGY OBJECTIVE SUMMARY

Support TVA's long-term success by managing environmental risk and impacts, increasing business and public value of environmental management and enhancing TVA's reputation.

Environmental Policy and Framework

ENVIRONMENTAL DIMENSIONS

Climate Change Mitigation

Air Quality Improvement

Water Resources Improvement

Waste Minimization

Sustainable Land Use

Natural Resource Management

Renewable Energy Strategy

IMPLEMENTATION PLANS

Carbon and Demand Response Strategy

Renewable Energy Strategy

Land and Shoreline Strategy

Natural Resource Strategy

Recreation Strategy

Clean Air Strategy

Carbon Strategy

Water Resource Strategy

Waste Management Strategy

Hazardous Materials Strategy

TVA Facilities and Fleet Operations

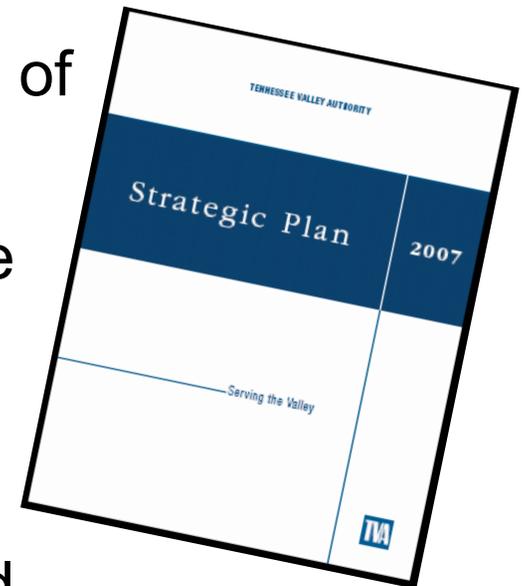
Others



Strategic Plan Commitments

What the 2007 TVA Strategic Plan says about renewables

- “TVA will strive to reduce the carbon intensity of its generation by increasing renewable generating capacity”
- “The TVA Strategic Plan promotes reduction of TVA’s environmental footprint, including a reduction in carbon intensity and an increase in renewables generation”
- “Moving forward, TVA will make decisions that give strong consideration to fuel mix and generation assets that are low- or zero-carbon emitting resources”





Stakeholder Input

Sources

- One-on-one interviews with key constituencies
- Board listening sessions on renewables and energy efficiency
- Nine regional town hall meetings (*continuing to be conducted through April*)



Preliminary Input and Comments

- Limited regional supply
- Renewable and clean
- Partnerships needed
- Proactive education and outreach
- Premium programs above Renewable Portfolio Standards (RPS)
- Being a leader in some aspect of renewables



Current Situational Assessment

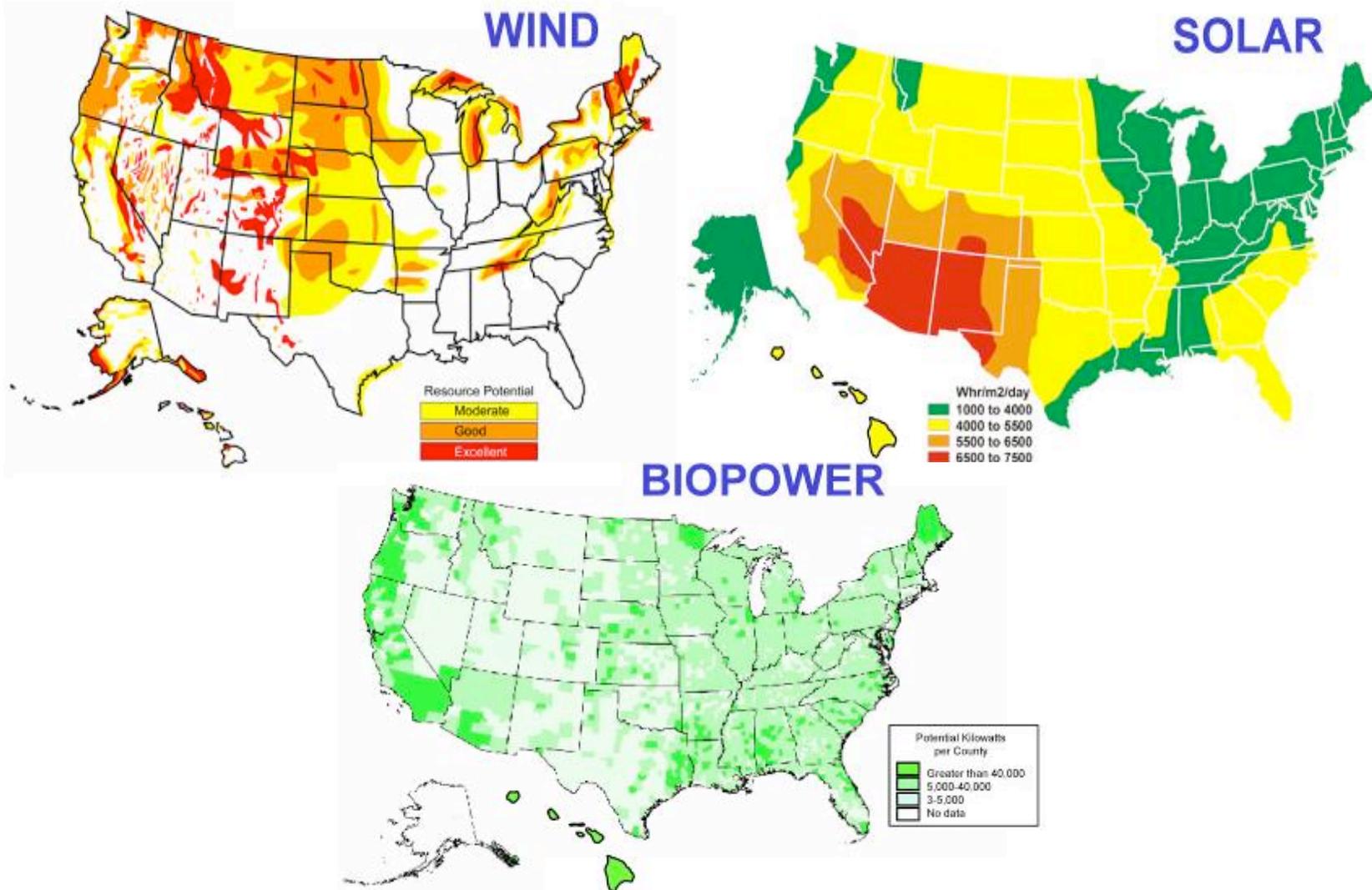
These are some of the activities in progress

- Collecting and assessing stakeholder input
- Evaluating potential renewable resources in the Valley
- Identifying long-term renewable energy generation goals associated with both regulatory compliance and voluntary actions
- Assessing economics associated with these goals
- Assessing technologies, regulations, and the political and economic environment



U.S. Renewable Energy Resources

Compared to the rest of the country, there are less renewable resources in the Southeast





TVA's Current Renewables Supply

	Capacity (MW)	Energy (MWh)
Generation Partners	0.24	281
TVA Solar	0.35	460
TVA Wind	2.00	3,854
Middlepoint Landfill Gas PPA	2.20	13,490
Allen Fossil digester gas cofiring	8.00	35,040
Colbert Fossil wood waste cofiring	7.00	45,990
Wind PPA with Invenergy	27.00	54,400
HMOD (hydro modernization)	412.00	398,499
Total	458.79	552,014

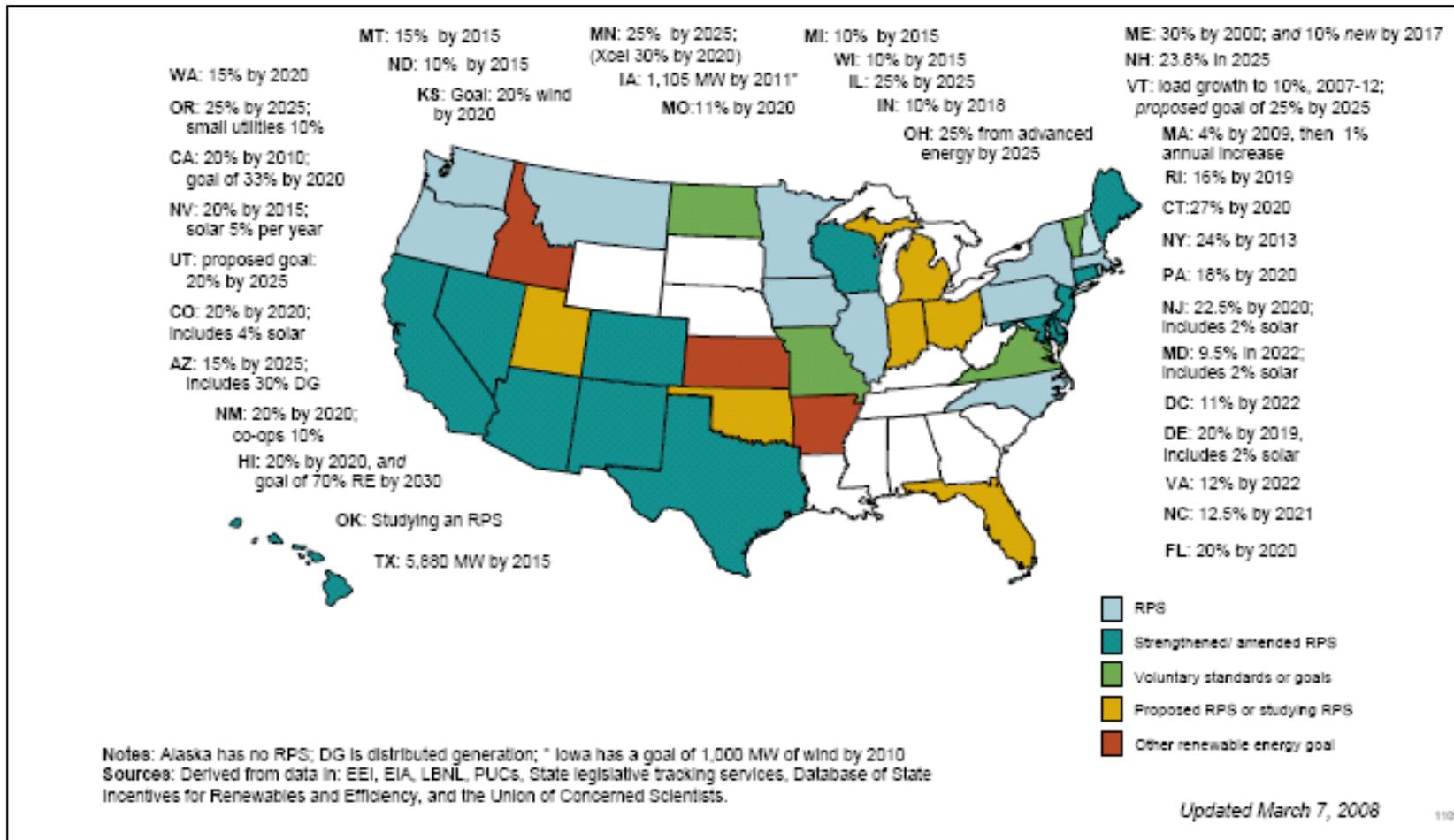
*as of 1/1/08



Renewable Portfolio Standards

A Renewable Portfolio Standard (RPS) requires that a percent of energy sales come from renewable resources

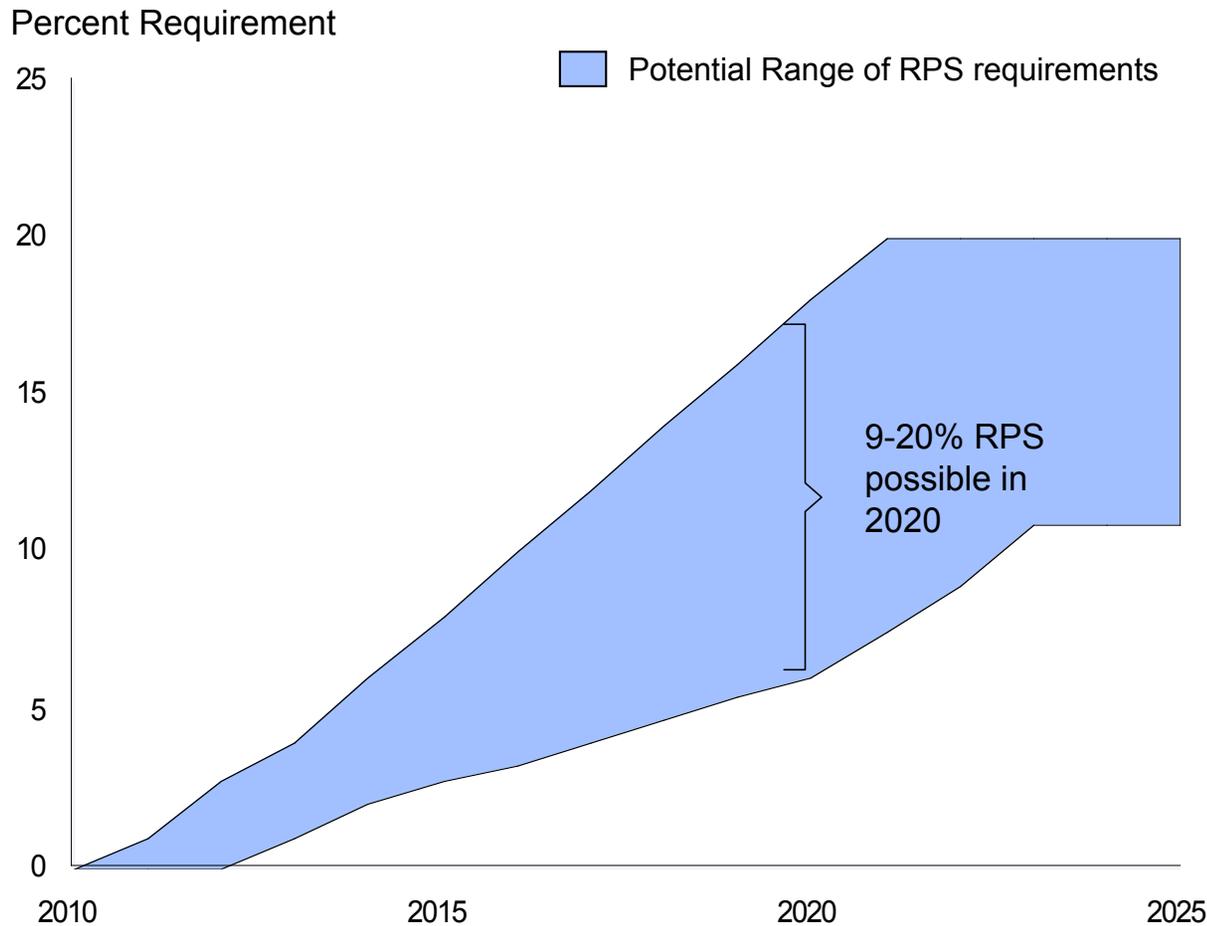
- 26 states and D.C. have renewable energy standards
- Four states have enacted renewable goals without financial penalties.
- U.S. Congress has proposed a Federal RPS, may become law in the near future





Federal RPS Outlook

Federal RPS could range from 9% to 20% by 2020



Compliance Methods

“Traditional” renewable resources

- Incremental hydropower
- Biomass
- Wind
- Landfill gas
- Solar (*distributed and central*)
- Geothermal energy
- Hydrokinetic energy
- Ocean
- Tidal

Renewable Energy Certificates

Alternative Compliance Penalty

Energy Efficiency



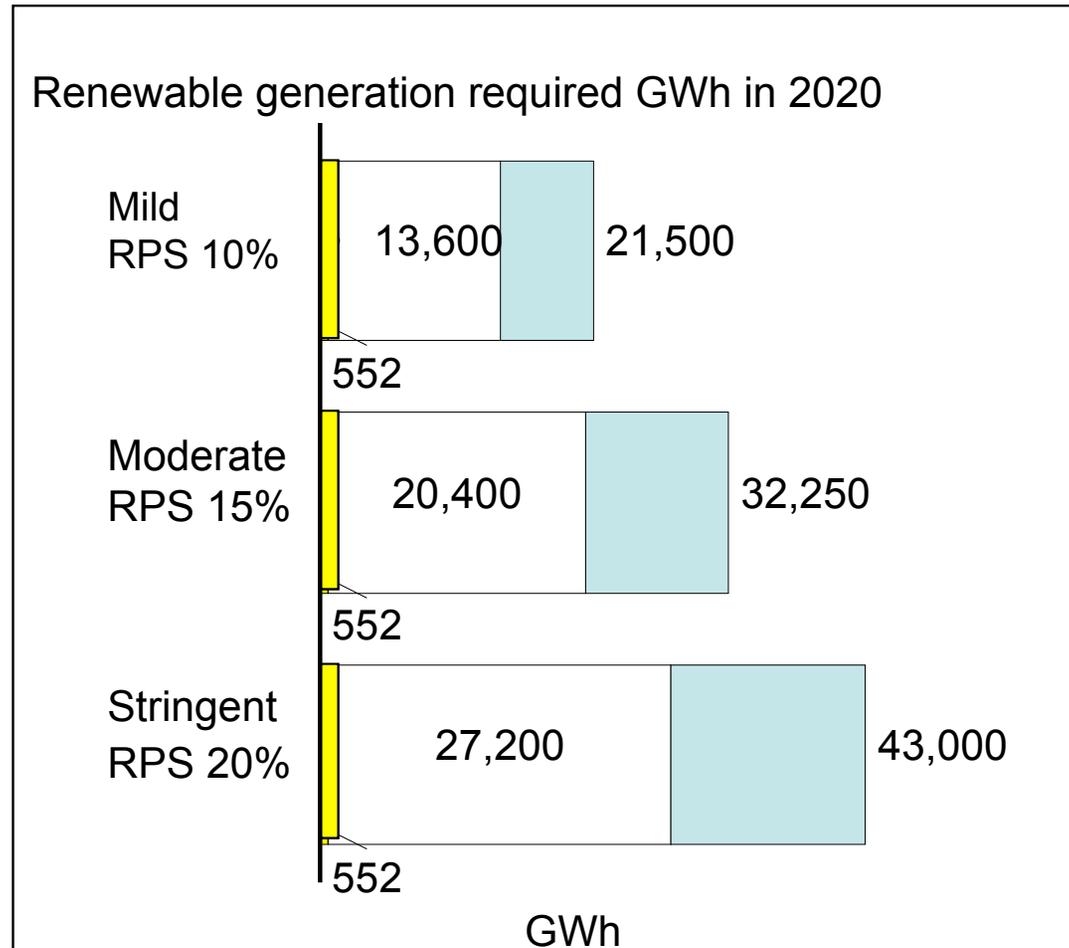
RPS Renewable Energy Requirements

TVA renewable energy required to meet various RPS levels

RPS Scenarios – “Traditional” Sources

Existing TVA
renewable
generation 

Likely exclusions
based on size of
retail sales and
existing hydro 





Other Renewable Energy Drivers

In addition to RPS, these are the other drivers for renewables

- **Energy Policy Act 2005**

- Requires that electric energy consumed by federal agencies be derived from renewables as follows:

- FY 2007 – 2009: 3%
 - FY 2010 – 2012: 5%
 - FY 2013 – thereafter: 7.5%

- **Executive Order 13423**

- Requires that at least half of the statutorily required renewable energy consumed by a federal agency must come from new renewable sources (in service after January 1, 1999)

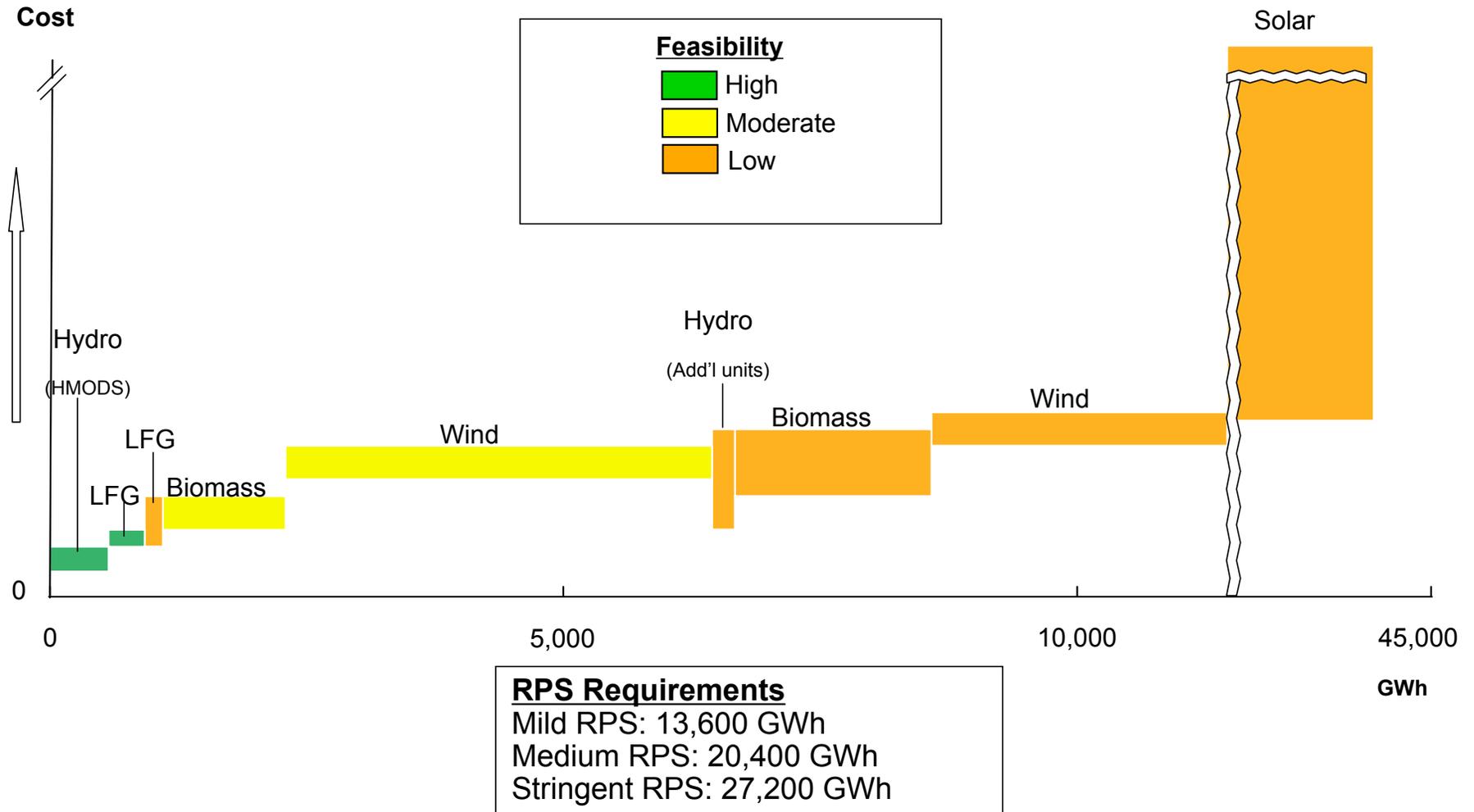
- **Green Power Switch (GPS)**

- Approximately 12,000 residential and 500 business customers, and growing



Potential “Traditional” Renewables Supply in Valley

TVA service area renewables supply curve (2020)



• Developed using McKinsey & Company proprietary tools

LFG – landfill gas
GWh – gigawatt hours



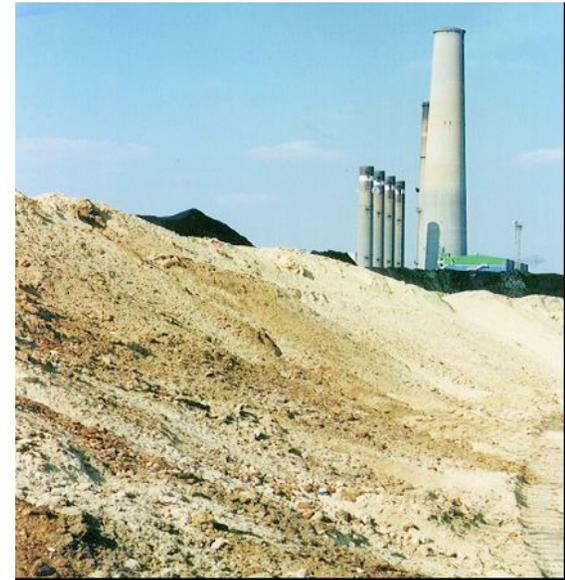
Biomass

- Benefits:

- Carbon neutral when done in a sustainable manner
- Regional use of timber waste
- Regional potential for a cash crop
- Less waste sent to landfills

- Challenges:

- Potential impact of cofiring on SCR catalyst and ash disposal, nitrates, particulates
- Significant capital required to upgrade units to achieve high levels
- Uncertain cost, availability, and competition with others for biomass resource



- Benefits:
 - Does not require fuel source other than wind
 - Offsets greenhouse gases
 - Relatively simple design, short lead-time construction
- Challenges:
 - Limited regional sites, class 3
 - Wide range of potential future costs
 - Siting resistance due to aesthetic and visual impact of wind turbines
 - Competition for “choice” sites with regional competitors





Landfill Gas

- Benefits:
 - Practical for a large range of sized landfills
 - Converts waste material into useable energy
 - Methane gas is captured and used productively
- Challenges:
 - Uncertainty of production life of landfill gas
 - Transmission line availability





Solar

- Benefits:

- Does not require fuel source other than sunshine
- Offsets greenhouse gases
- Can reduce household or facility electric bill

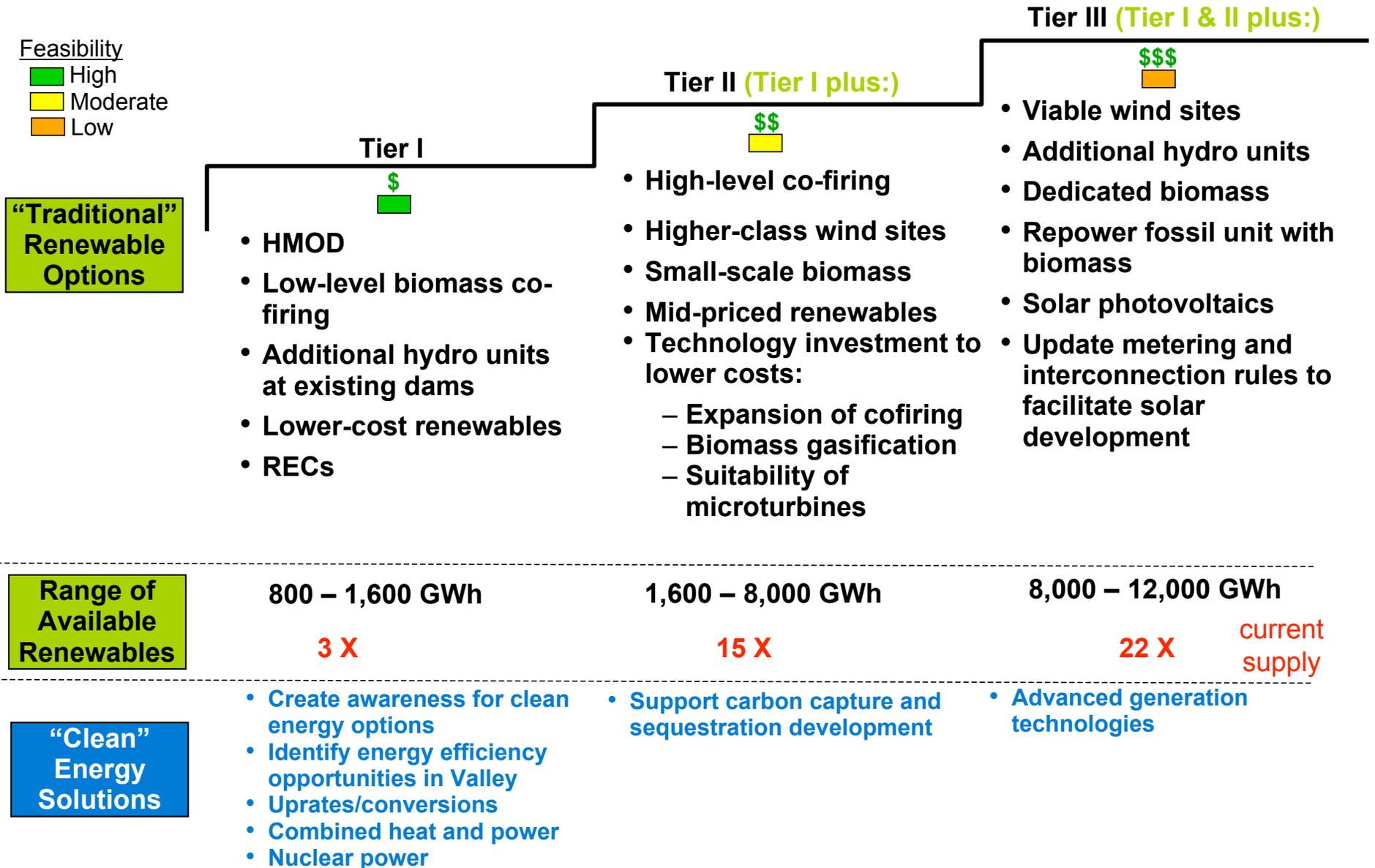


- Challenges:

- Current high costs
- Incentives necessary to accelerate adoption
- Large scale solar (e.g. concentrated solar power) less efficient compared to PV



Potential Roadmap For Clean Energy



TVA Strategic Plan

Customer

- Social responsibility
- Renewable supply for GPS subscribers
- End-use renewables offsets

Operational

- Renewables; increasingly more important role
- Diverse portfolio
- Energy security

Environmental

- Smaller environmental footprint
- Reduce carbon intensity

Financial

- Sound financial health
- Manage risk and economic exposure

Policy and Framework

1. Identify immediate actions
2. Meet compliance obligations for TVA customers
3. Develop pricing structure
4. Implement public education initiatives
5. Explore clean regional generation options
6. Plan for long-term commitment to clean energy sources
7. Take leadership position in a targeted area

Guiding Principles

Operational Plans

Renewable and Clean Energy Plan

Compliance Focus

Renewable Enablers

Clean Energy Supply



Next Steps

- Continue public input
- Seek Board consideration of the Renewable and Clean Energy Guiding Principles at the May board meeting
- Finalize plan (subject to environmental review)