

SMARTargets™

A Methodology for Grounded and Actionable
Climate Targets Aligned with Global Goals



SMARTargets™

*A Methodology for Grounded and Actionable
Climate Targets Aligned with Global Goals*

**Steven Rose, Ph.D., Claudia Octaviano, Ph.D., Dan Livengood, Ph.D.,
Francisco Ralston Fonseca, Ph.D.,** Energy Systems and Climate Analysis Research

Draft Methodology Public Comment Process Launch Webcast
July 8, 2025

Welcome to SMARTargets!

- We need your input
 - SMARTargets...
 - A methodology for grounded, actionable climate targets and strategies aligned with science and international climate goals
 - Designed to help companies contribute to the pursuit of international climate aspirations while identifying strategies that account for their actual opportunities and risks
 - Is an opportunity to transform corporate planning, risk management, and stakeholder dialogue, and facilitate real solutions and progress
 - We have a draft methodology and want your feedback
- Today's objectives
 - Introduce you to SMARTargets methodology
 - Discuss the commenting process, including how to comment
 - Q&A

Thank you for
your interest!



SMARTargets™ – The Initiative

1. **Methodology Development:** A new methodology for grounded, actionable targets and strategies aligned with science and the Paris Agreement that can be validated
 - *Initial utility focus, but methodology concepts generalize and a template for others*
2. **Education and facilitation:** Scientific educational and public outreach and resources and facilitation of dialogue
3. **Engagement:** Broad engagement with companies, stakeholders, scientific community, and public for perspectives, input, guidance, and dialogue



Companies worldwide need a scientifically sound greenhouse gas target setting approach and validation option

Introduction to EPRI and the SMARTargets Research Team



Why EPRI? Recognized scientific expertise & objectivity!

- EPRI is a non-advocacy, nonprofit, scientific research organization with a public benefit mandate
- Decades of recognized scientific research and expertise in climate science and scenarios, economic & energy transformation, policy evaluation, and sustainability
- Expert participation in, among other things, the U.S. National Academies of Sciences, Intergovernmental Panel on Climate Change (IPCC), U.S. EPA Science Advisory Board, scenarios research community, and the Task Force on Climate-Related Financial Disclosures (TCFD) Advisory Group

Steven Rose, Ph.D. (Cornell)

- Scientific expertise: climate scenarios, socioeconomic transitions, climate change and management, climate risk assessment
- Scientific expert: NAS, IPCC (4th, 5th, 6th), EPA SAB, NCA, TCFD, U.S. Carbon Cycle Science Program
- Ph.D., Economics, Cornell



Claudia Octaviano, Ph.D. (MIT)

- Scientific expertise: systems modeling, climate mitigation economics, environmental science
- Policy expert: NDC target setting, stakeholder engagement, international negotiations, carbon markets, economy-wide decarbonization
- Ph.D., Systems Engineering, MIT; MS, Environmental Science, Yale



Dan Livengood, Ph.D. (MIT)

- Scientific expertise: Emerging technologies, resource planning, decarbonization pathways, distributed energy resources and reliability.
- Ph.D., Systems Engineering, MIT; MS, Systems Science & Mathematics, Washington University



Francisco Ralston Fonseca, Ph.D. (Carnegie Mellon)

- Scientific expertise: Energy system decarbonization, power sector climate impacts
- Consulting expertise: Brazil energy sector, generation financial analysis, auction decision-support, optimized renewable portfolios
- Ph.D., Engineering and Public Policy, CMU; MS, Operations Research, Columbia University



Morgan Scott (MS, Columbia)

- Sustainability expertise: ESG reporting & disclosure, sustainability goals/UNSDGs, metrics
- Sustainability leadership: Led/co-led Climate READi, Equitable Decarbonization Initiative, Understanding Climate Scenarios and Goal Setting, Strategic Sustainability Science Program
- M.S., Sustainability Management, Columbia



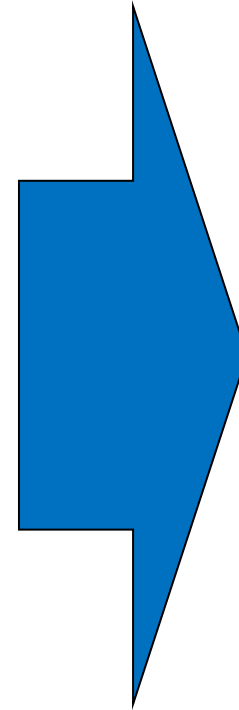
EPRI strives to advance knowledge and facilitate informed discussion and decision-making

Introduction to SMARTargets



Motivation: a new corporate GHG target setting methodology is needed, as is transition risk analysis

- Enthusiasm worldwide for corporate GHG targets aligned with the Paris Agreement
- Significant pressure on companies to adopt specific methodologies or benchmarks (e.g., Science Based Targets, TPI, net-zero)
- However, scientific assessment has found existing methodologies and expectations to not be aligned with the science, ignoring important issues, and not helping companies identify actionable targets and strategies
- And, the multi-decadal planning landscape includes significant uncertainty—policy and non-policy



Need a new methodology

Need scientific education



SMARTargets methodology development

- The methodology has been developed through a rigorous process with extensive engagement :
 - A formal independent scientific peer review,
 - A Stakeholder Advisory Group, which includes organizations from the finance, environmental, regulatory, consulting, and cross-industry sectors,
 - Technical experts from electric, gas, and transmission & distribution utilities, and
 - Internal subject matter research experts
- Public feedback is the next major milestone
 - 45-day public comment period starts today: July 8th to August 22nd
- We are aiming to officially launch the methodology in Q4 2025, with domestic and international events



STAKEHOLDER
COLLABORATION



INDEPENDENT
SCIENTIFIC
REVIEW



Formal independent scientific peer review

Novel step! To further the scientific credibility of SMARTargets.



Reviewers

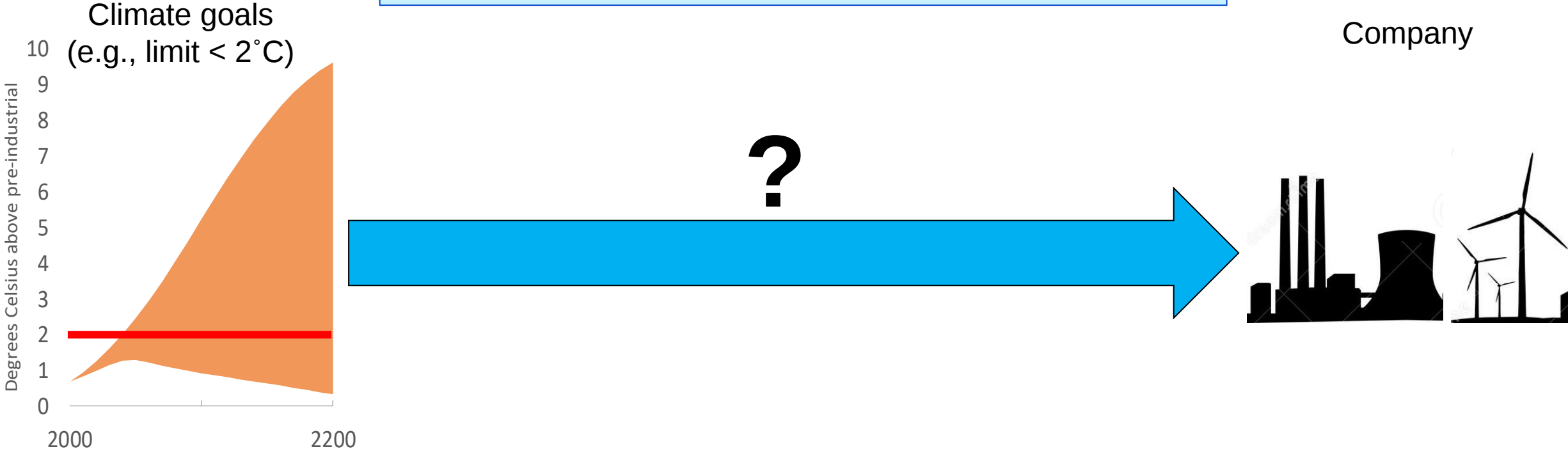
- [Professor Max Brown](#), Colorado School of Mines, electric sector and energy system modeler, formerly NREL
- [Dr. Vaibhav Chaturvedi](#), Council of Energy, Environment, and Water of India, long-term modeling and carbon markets
- [Professor Celine Guivarch](#), Ecole des Ponts ParisTech and CIRED, IPCC AR6 WG3 LA on global pathways and societal impacts
- [Dr. Stephane Hallegatte](#), World Bank, chief climate economist and lead on country transition analyses
- [Professor Thomas Heller](#), Stanford University, finance climate risk assessment
- [Professor Robert Lempert](#), RAND, decision-making under uncertainty
- [Professor Granger Morgan](#), Carnegie Mellon University, decarbonization, power sector, scenario, uncertainty analysis
- [Professor Roberto Schaeffer](#), Federal University of Rio de Janeiro and IPCC AR6 WG3 CLA on global and Brazil pathways and decarbonization modeling
- [Professor David Victor](#), UC San Diego, climate policy and legal
- Reviewer selection criteria: required and appropriate expertise, credibility, objectivity, and absence of conflict of interest
- Expertise sought:
 - Potential global transitions
 - Potential sub-global transitions
 - Risk assessment & management
 - Decision-making under uncertainty
 - Country decarbonization and risk assessment
 - Company planning and risk management
 - Power and energy system modeling
- Charge to reviewers: Charge questions sought input on the scientific foundations, the methodology, implementation and outputs, and other general aspects

SMARTargets Scientific Foundations



Global climate goals and the relationship to companies?

EPRI has been assessing the scientific relationship between a company and a global average temperature goal



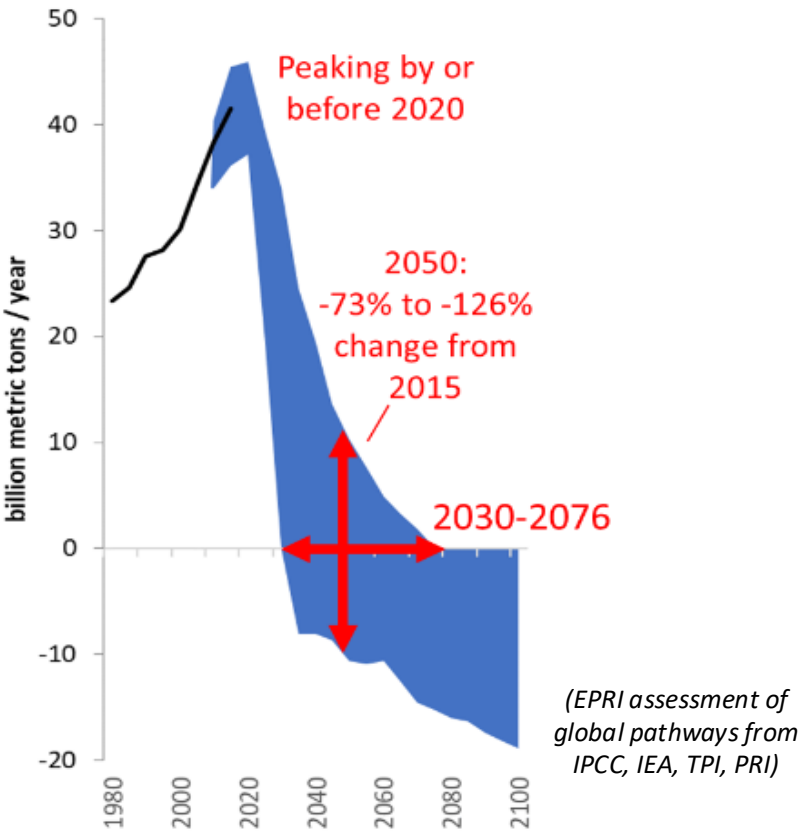
EPRI, 2018. [Grounding Decisions: A Scientific Foundation for Companies Considering Global Climate Scenarios and Greenhouse Gas Goals](#)

Key Scientific Observations

Key Scientific Observation	
1	Many different transition pathways are consistent (aligned) with achieving a global temperature goal
2	Global pathways aligned with limiting warming to 2°C and 1.5°C have influential but uncertain assumptions
3	Alternative future conditions can have very different transition implications
4	Transition opportunities vary by company
5	Global pathways provide high-level guidance but have significant limitations in informing companies
6	Practical issues defining a company’s circumstances affect GHG abatement opportunities

Public comment draft. Not for citation.

1.5°C global net CO₂ pathway range from IPCC (2022) and others



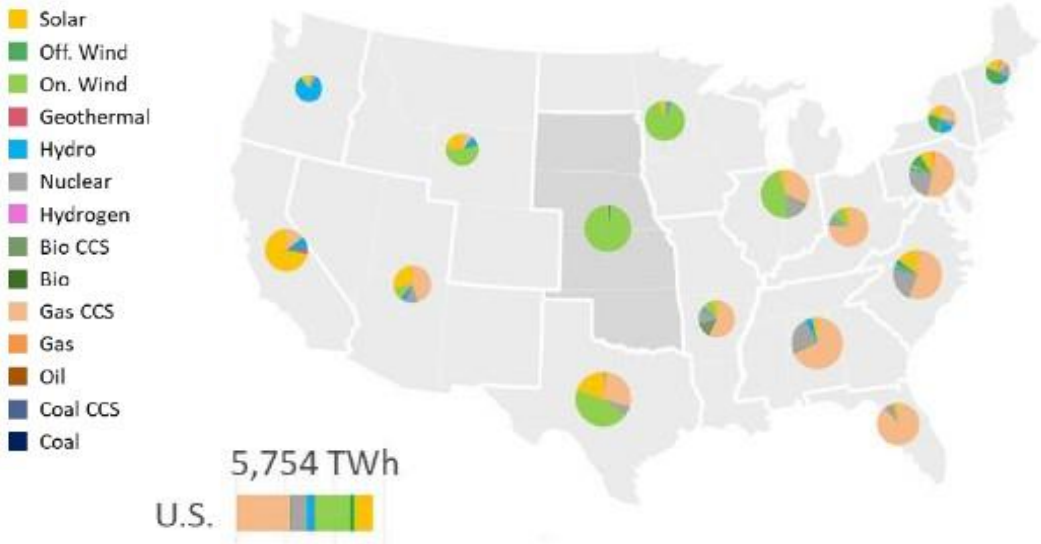
Science Observations Inform Company GHG Target Setting

Key Scientific Observations

Key Scientific Observation	
1	Many different transition pathways are consistent (aligned) with achieving a global temperature goal
2	Global pathways aligned with limiting warming to 2°C and 1.5°C have influential but uncertain assumptions
3	Alternative future conditions can have very different transition implications
4	Transition opportunities vary by company
5	Global pathways provide high-level guidance but have significant limitations in informing companies
6	Practical issues defining a company’s circumstances affect GHG abatement opportunities

Public comment draft. Not for citation.

Differences in regional decarbonization opportunities
(e.g., regional electricity generation in a 2050 net-zero US economy with one set of technology assumptions)



Science Observations Inform Company GHG Target Setting

Key Scientific Observations and Company Implications

Key Scientific Observation		Key Company Climate Target Setting Implication
1	Many different transition pathways are consistent (aligned) with achieving a global temperature goal	The science does not provide guidance regarding a specific transition pathway for a company
2	Global pathways aligned with limiting warming to 2°C and 1.5°C have influential but uncertain assumptions	Policy design and technology deployment are uncertainties companies cannot ignore
3	Alternative future conditions can have very different transition implications	It is essential to evaluate transition implications uncertainties and risks
4	Transition opportunities vary by company	Each company needs to evaluate its transition opportunities and risks
5	Global pathways provide high-level guidance but have significant limitations in informing companies	Global pathways help identify aspirational levels of effort and facilitate coordination, but it is impractical to expect individual companies to achieve the aggregate outcomes
6	Practical issues defining a company’s circumstances affect GHG abatement opportunities	Assessment of target setting capacity and a company’s current situation are necessary

Public
comment
draft. Not for
citation.

Science Observations Inform Company GHG Target Setting

Requirements for a methodology to be “science-based”

Requirements for science-based alignment with a global temperature goal

Recognize the science

- Aligned ranges
- Assumptions
- Variation in implications
- Pathway limitations and guidance

(e.g., global pathways provide no information about individual company opportunities and risks but help identify aspirational goals and coordinate effort)

Requirements for science-based decision-making

Consider uncertainty

Recognize unique opportunities and risks

Inform multiple priorities

Provide flexibility

Support resiliency

Current approaches are not aligned with these scientific requirements

Science-based operational requirements as well

■ The SMARTargets Methodology needs to...

1. Inform the identification of **actionable targets and strategies** for each company,
2. Help a company assess and **manage transition risk**,
3. Help a company **integrate GHG abatement into strategic planning**,
4. Help a company **communicate the most ambitious level of GHG reductions** they can achieve and the role of enabling conditions for greater ambition,
5. Assist with climate-related **transition risk disclosure**, and
6. Facilitate cost-effective **economy-wide decarbonization**.

Designed to complement and enhance existing planning, risk management, and engagement



SMARTargets informed by and informing business units and teams

More comprehensive “Paris Agreement Alignment”

1. Alignment with the Paris Agreement global temperature goals
 - Limiting global average temperature increase to “well below” 2°C, and “pursuing” limiting the increase to 1.5°C

AND

2. Alignment with other provisions of the Paris Agreement
 - e.g., recognition of country differences in opportunities, multiple priorities, and enabling factors such as cooperation

The Draft SMARTargets Methodology



Methodology flow – 8 steps

- 1 **STEP 1: GHG inventories and base year**
- 2 **STEP 2: Practical issues and climate target groupings**
- 3 **STEP 3: Aspirational climate targets aligned with international goals**
- 4 **STEP 4: Company transition risk analysis of opportunities and risks**
- 5 **STEP 5: Strategy and qualified target alignment with international goals**
- 6 **STEP 6: Documentation and communication**
- 7 **STEP 7: Validation and verification**
- 8 **STEP 8: Monitoring and adjusting**

Standardized
decisions and
outputs from each
step documented in
the Reporting
Template

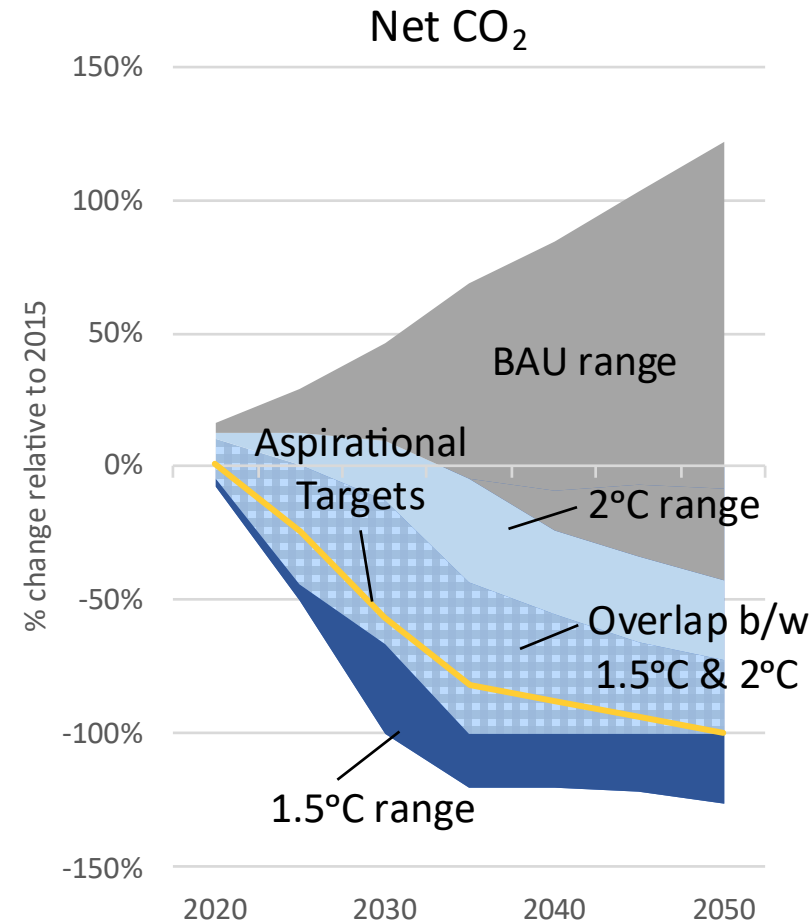
Companies evaluate and pursue two types of targets – Aspirational & Qualified

SMARTargets has companies evaluate and pursue Aspirational and Qualified Targets (ATs & QTs), identifying enabling and qualifying conditions

ATs generic and aspirational – based on 1.5°C global total emissions pathway ranges. Companies identify required enabling conditions, including offsets and supportive policies.

QTs recognition of global pathway limitations – company derived from transition risk analysis. The greatest reductions possible while balancing trade-offs and risks under different conditions. QTs assessed relative to well-below 2°C global pathway ranges. QTs can be more or less than ATs.

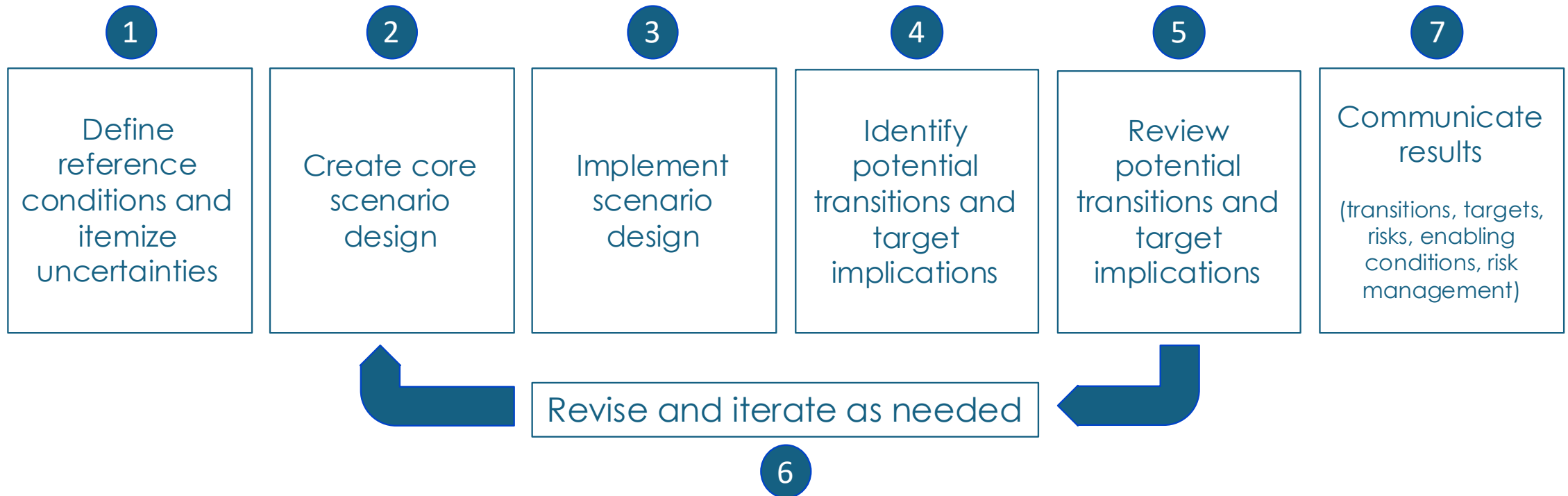
SMARTargets Aspirational Targets (ATs) for net CO₂ emissions and 1.5°C and well-below 2°C global pathway ranges



Aspirational Targets can be set by GHG (e.g., CO₂, CH₄, SF₆) or across GHGs (CO₂e)

Company-Tailored Transition Risk Analysis

A risk-based approach that helps companies **explore a broader set of futures** and transition opportunities and risks than typically considered in company planning



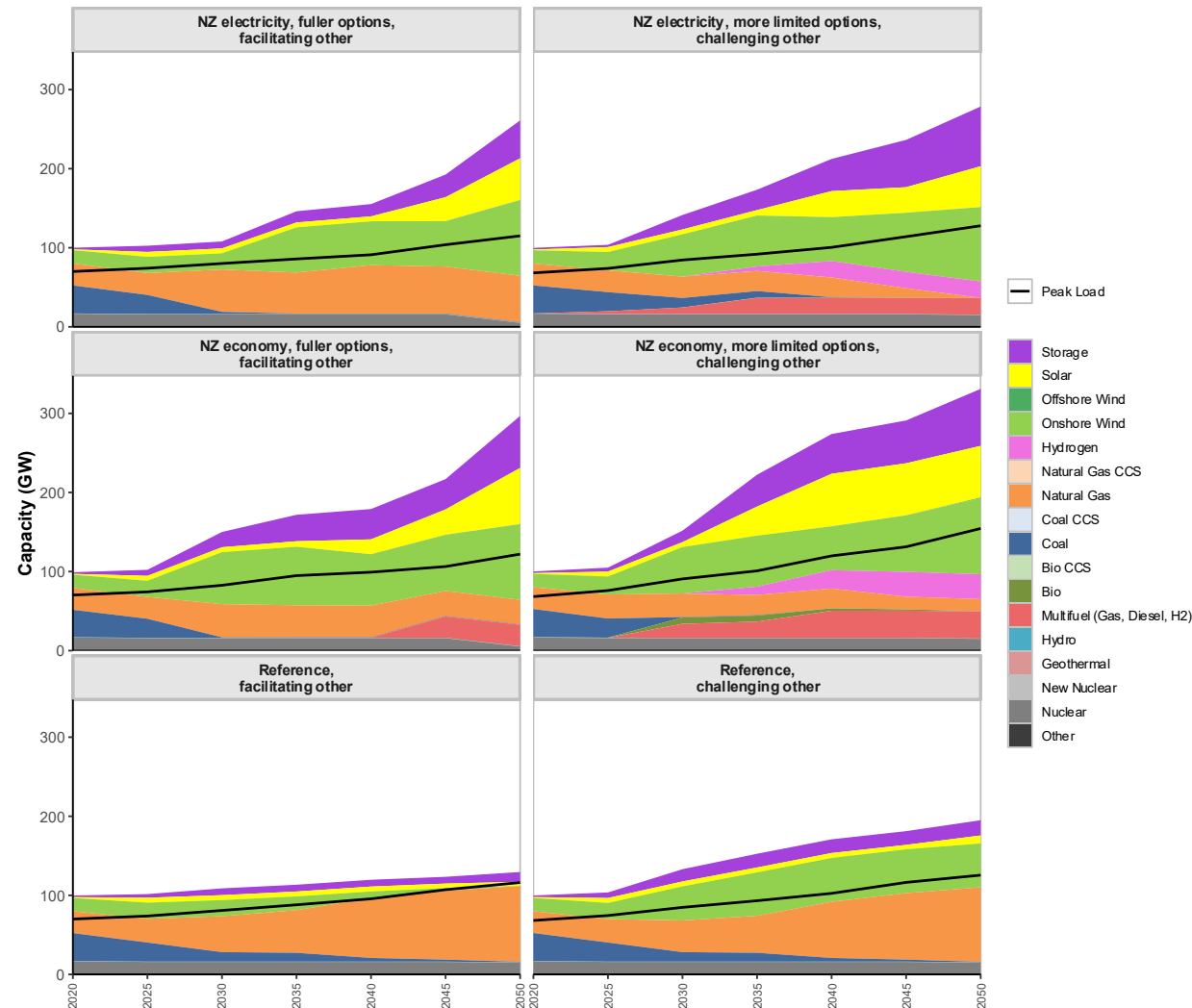
SMARTargets will help companies identify investments and risks

Illustration of potential electricity generation capacity transitions for a Midwest U.S. region with the SMARTargets core electric sector net-zero CO₂ by 2050 scenarios

With electric sector net-zero transition

With economy-wide net-zero transition

With Reference transition



Evaluating plausible extreme future conditions to identify opportunities and risks

SMARTargets will help companies evaluate transition opportunities and risks

- Characterizing **regional economy-wide** transition alternatives and challenges
- Evaluating in terms of **multiple priorities** – e.g., affordability, reliability, sustainability
- Revealing **transition variation, risks and risk factors**, enabling conditions, and potential risk management strategies (e.g., contingencies)

Example cross-variable transition ranges and risks to net-zero by 2050 (e.g., a U.S. Midwest region)

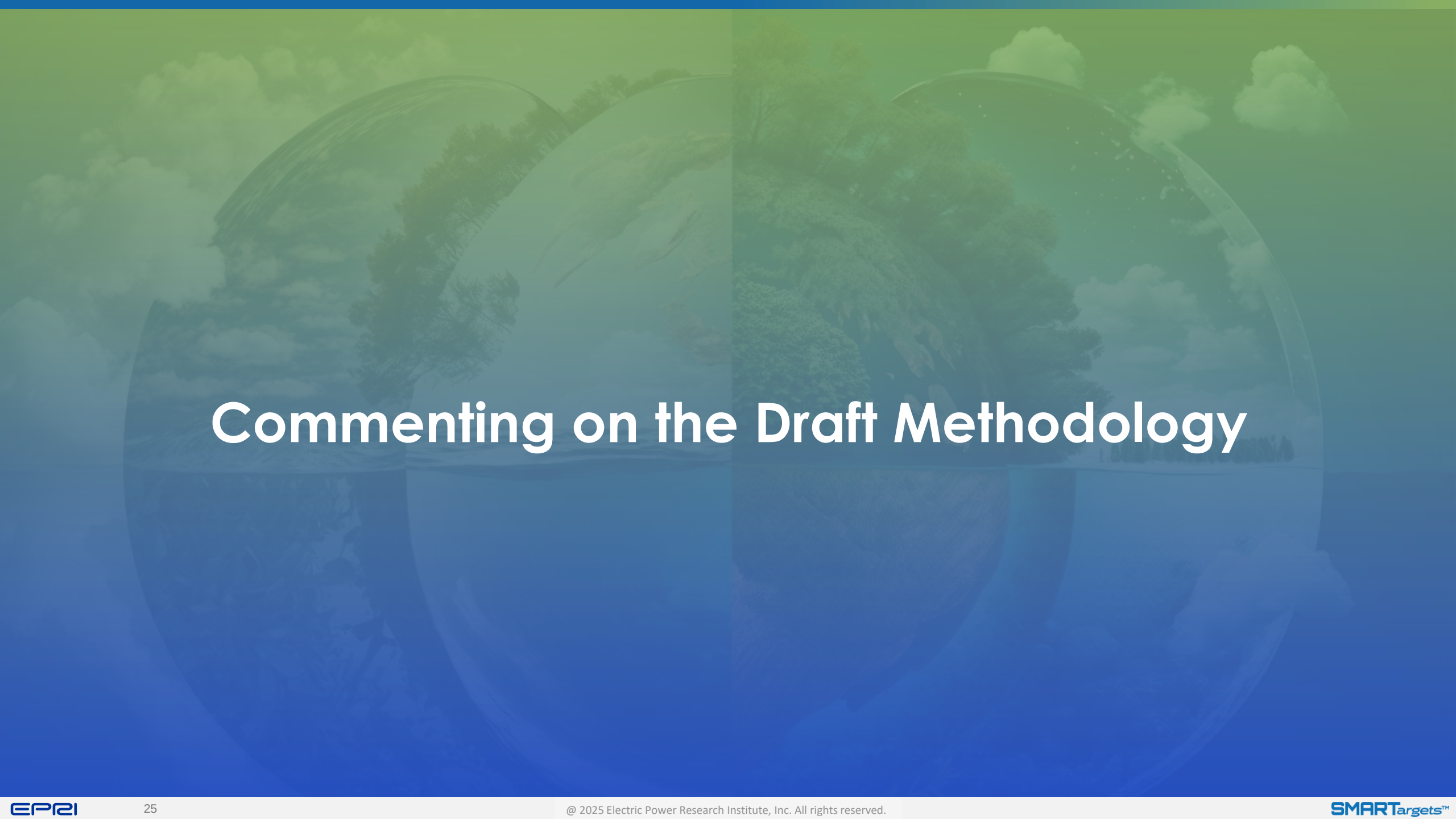
	Affordability			Stability					Optionality	Sustainability			
	Change in Wholesale Electricity Price	Electric Sector Costs		Total New Generation Builds	Total Generation Retirements	Net Power Imports	Variable Renewable Generation	Electric Load Growth	Dispatchable Resources	CO ₂ Emissions Reductions		CO ₂ Emissions Intensity	In-State Clean Electricity
	% Change vs 2020	\$ Billions NPV		GW from 2020	GW from 2020	% of Load	% of Total MWh	% Change vs 2020	% of Total Capacity	% reduction from 2020		% reduction in tCO ₂ /MWh from 2020	% of MWh
		Total	Capital							Electric	Economy		
Ranges for 2035	+109% to +388%	212 to 278	29 to 59	99 to 137	30 to 41	-23% to -3%	52% to 64%	5% to 46%	53% to 61%	77% to 99%	46% to 92%	79% to 100%	77% to 90%
Ranges for 2050	+19% to +43%	263 to 343	64 to 103	250 to 308	61 to 79	-6% to -2%	74% to 85%	30% to 73%	42% to 50%	100% to 100%	72% to 126%	100% to 104%	94% to 99%

What will having SMARTargets mean?



If a company says they have SMARTargets, it will mean...

1. They have **ambitious and actionable GHG targets** that are aligned with science and the international goals,
2. They followed a **grounded, rigorous, well-defined standardized process with standardized outputs** that provides transparency and comparability, and
3. They created a **wealth of company- and engagement-relevant information** on decisions and analysis, transition opportunities, targets, strategy, and risk management.



Commenting on the Draft Methodology

Draft SMARTargets materials for public comment

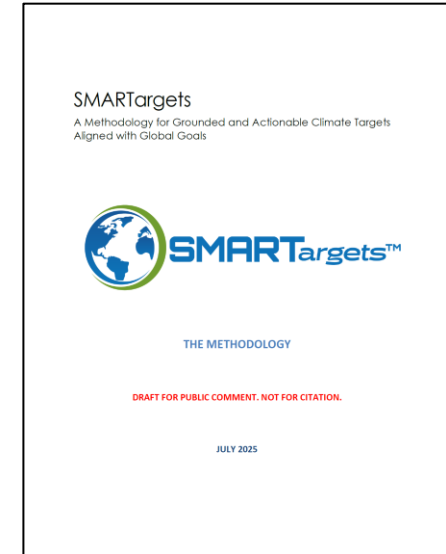
Primary materials (available now)

- SMARTargets Methodology: A Methodology for Grounded and Actionable Climate Targets Aligned with Global Goals
- SMARTargets Scientific Foundations: The Science Relevant to Corporate Greenhouse Gas Emissions Target Setting Based on Science

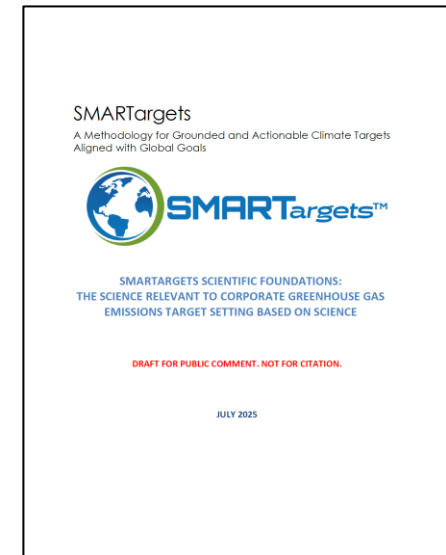
Supporting materials (available soon)

- SMARTargets Reporting Template: For Documenting and Validating SMARTargets
- Appendix B: SMARTargets Methodology Implementation Illustrative Examples
- SMARTargets Methodology Independent Scientific Peer Review Comments and Responses

Methodology



Scientific Foundations



How to participate in the SMARTargets Public Comment Process



Timeline

- Public Comment Period: July 8 – August 22 (45 days)
- Today's webcast marks the launch
- Webcast recording will be available soon on the [SMARTargets Public Comment Process Website](#)



Visit the Public Comment Website to Access:

- SMARTargets Methodology & Scientific Foundations (available July 8)
- Illustrative Examples & Methodology Template (available soon)
- Scientific peer review comments and responses (available soon)
- [SurveyMonkey Questionnaire](#) for submitting comments
 - Downloadable version of the questionnaire available to help you prepare
 - Option to upload additional feedback files at the end

We are anxious to have your input

Comment SurveyMonkey Questions



Questionnaire sections

- Overview
- Public Comment Process
- Science-based
- Paris Agreement Alignment
- Methodological Approach
- Communications
- Additional Feedback

SMARTTargets Public Comment Process

Science-Based

The Draft SMARTTargets Methodology is based on assessment of the science relevant to company-level GHG target setting and potential transitions. The SMARTTargets Scientific Foundations document identifies key observations from assessing that science and then derives specific scientific and operational requirements for the Draft SMARTTargets Methodology.

Do you think the relevant science is being properly represented and interpreted? If not, please provide specific suggestions, arguments, and citations for how the science should be appropriately represented or interpreted.

Do you agree with the methodology scientific and operational requirements derived from the scientific assessment and observations? If not, please provide specific suggestions, arguments, and citations for alternative requirements.

**You're welcome to skip questions and focus your feedback where it matters most to you.
However, we encourage you to use the form as fully as possible**

How to participate in the SMARTargets public comment process

Tips for Submitting Feedback

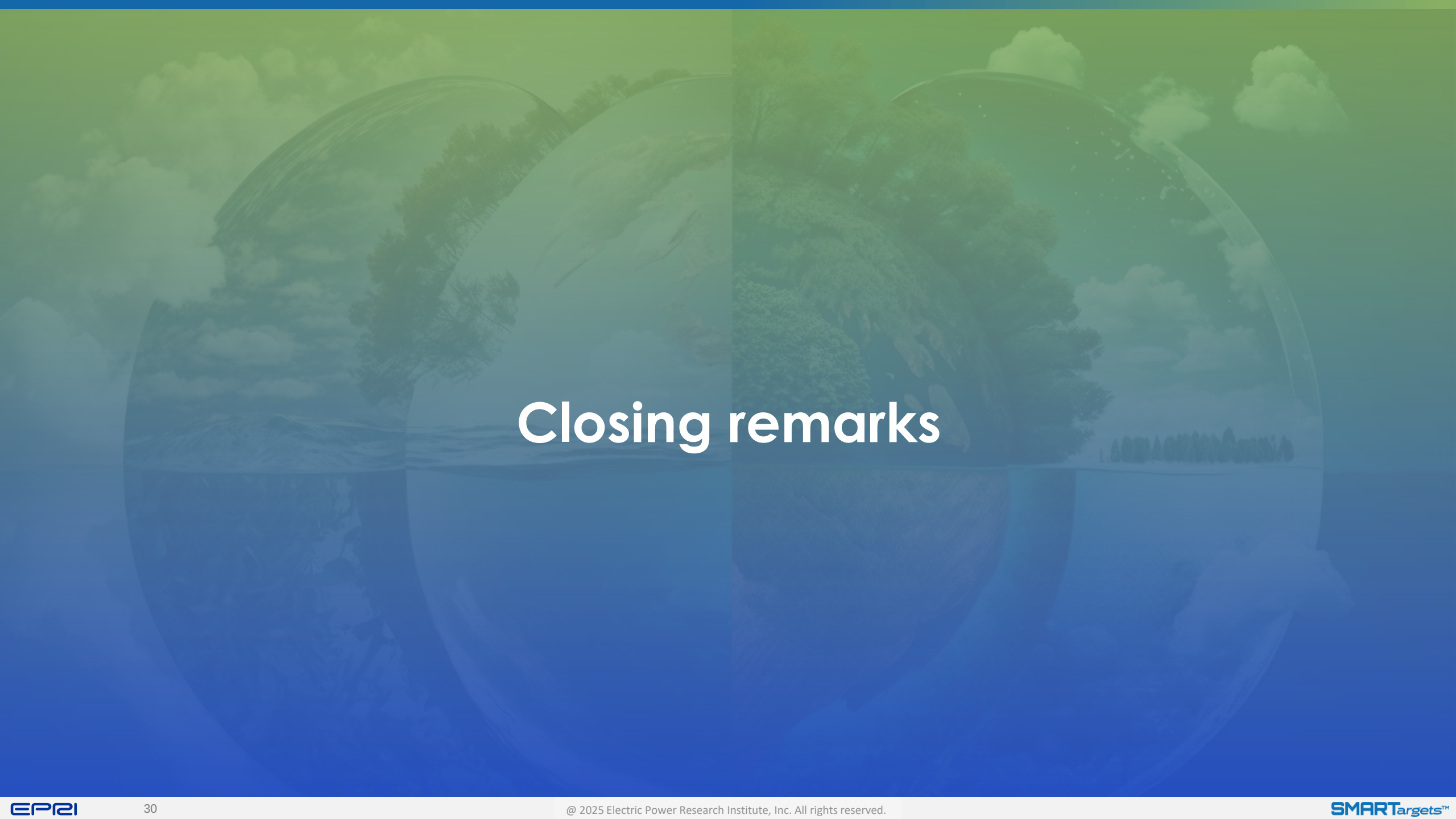
- Please consider the justification provided when responding – every element is derived from the science
- Provide clear justification for your suggestions, and reference scientific sources where possible
- Be specific—this helps us respond and meaningfully improve the methodology

What Happens Next

- EPRI will review the public feedback
- Improvements will be made as needed and supported by science
- A high-level summary of the comments and EPRI responses will be published

Questions?

- Email us at: smartargets@epri.com

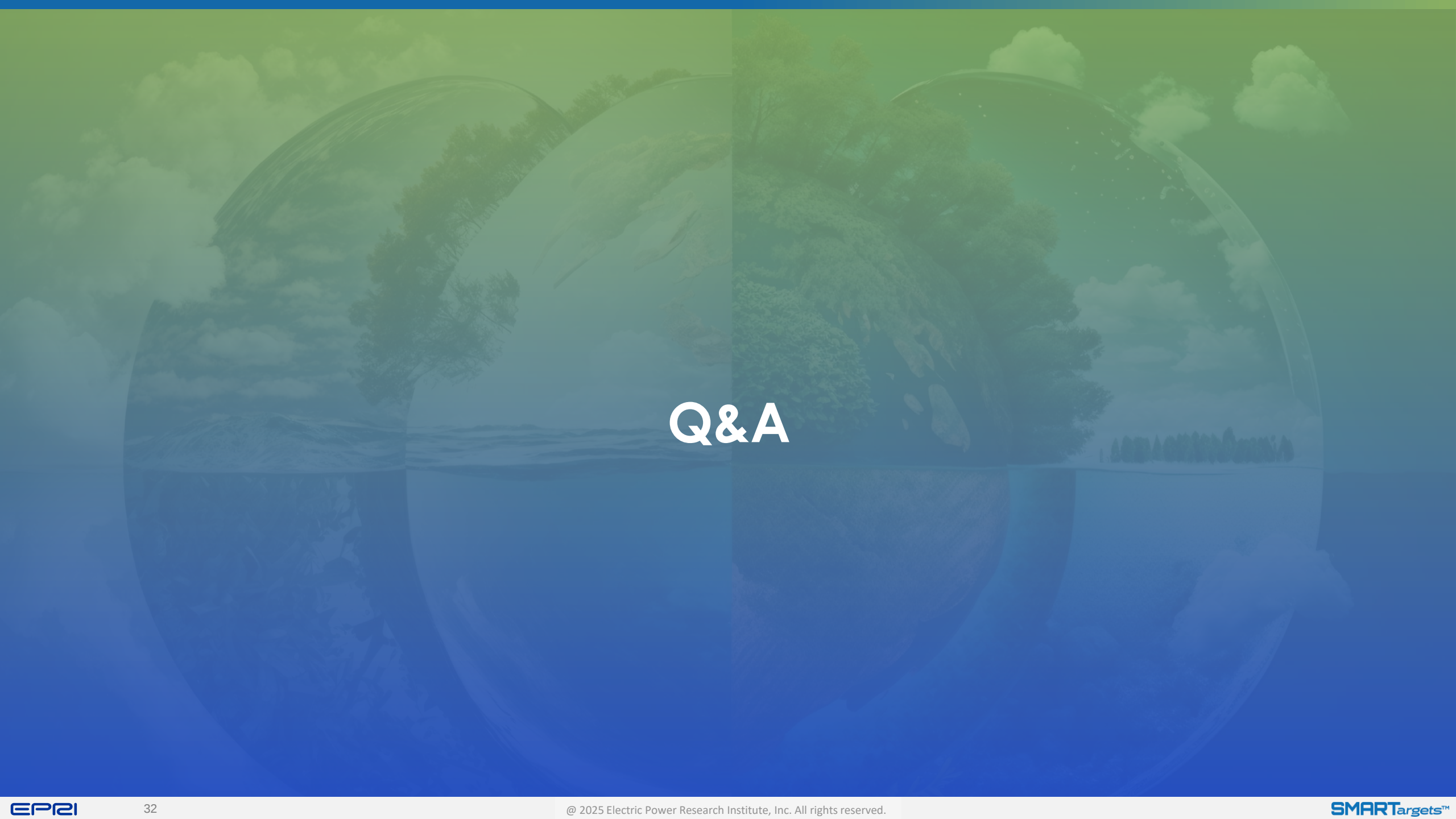


Closing remarks

Making climate targets smart



- SMARTargets...
 - Aligns with the international goals and provisions for achieving them
 - Aligns with all the relevant science
 - Prioritizes economy-wide decarbonization and transition risk management
 - Supports making progress with ambitious and real solutions, helping each company identify and communicate opportunities and risks
 - Facilitates independent and objective validation and verification activities
- The SMARTargets Initiative is...
 - Elevating transition planning and risk management,
 - Educating stakeholders on risks and opportunities (including cooperation), and
 - Facilitating actionable real solutions
- **We welcome your feedback and appreciate your support in helping us enhance planning and risk management and facilitate informed dialogue, cooperation, and progress**



Q&A



SMARTTargets™

*A Methodology for Grounded and Actionable
Climate Targets Aligned with Global Goals*

<https://msites.epri.com/smarttargets>



Sign-up for
initiative
updates at the
website

Thank you!

Please do not hesitate to contact us:

Steven Rose, Ph.D.
srose@epri.com

Claudia Octaviano, Ph.D.
coctaviano@epri.com