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# Environmentally Achievable 100% Renewables by 2035: Noise, Aesthetics & Water

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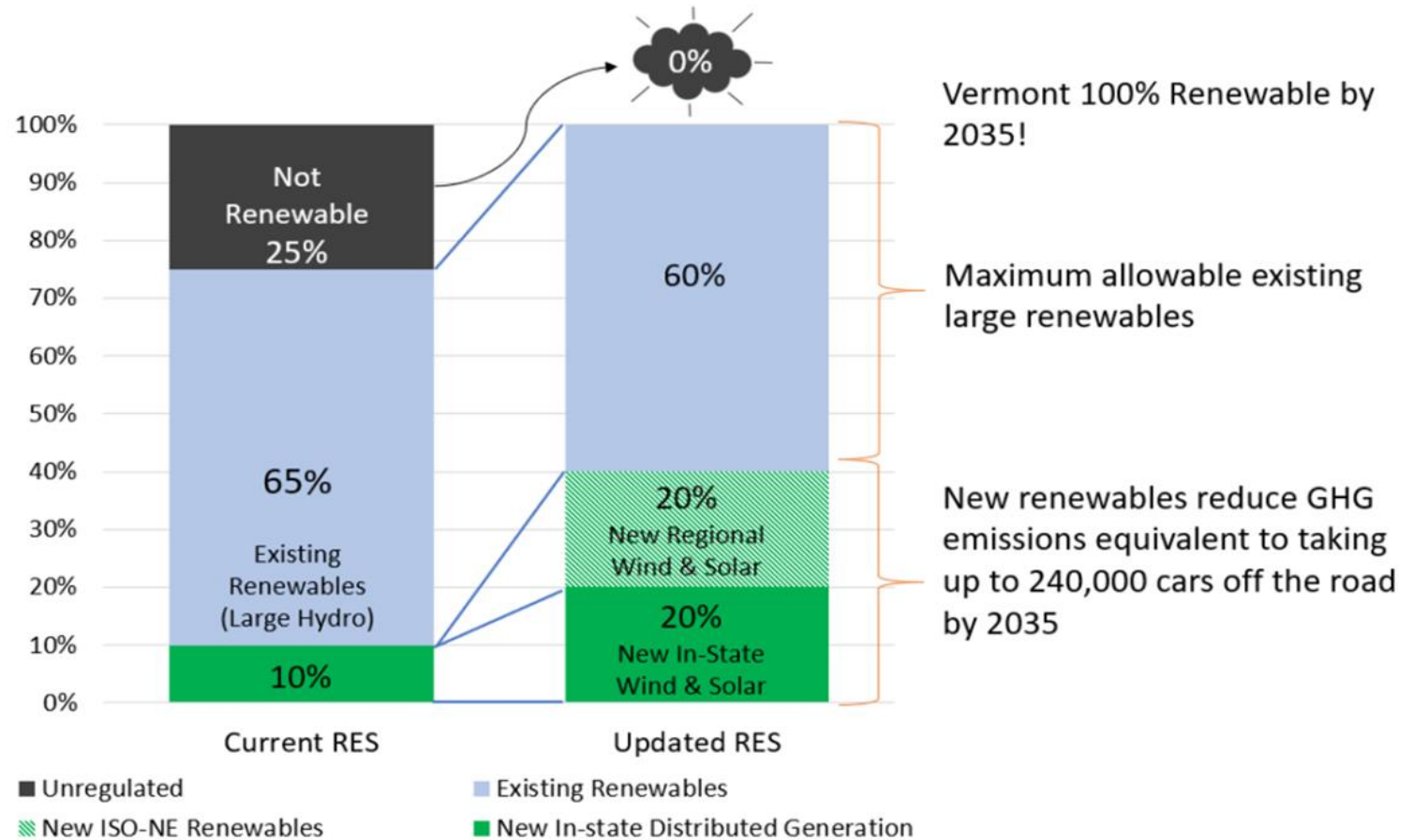
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# NEW VERMONT RENEWABLE ENERGY STANDARD

Current In-State Renewable Generation (approximate):

- ~315 MW of installed solar
- 5 utility scale wind farms totaling ~150 MW



Ref: REV, Sterling, Vermont Legislature Enact Landmark 100% Renewable Energy Bill, 7-16-24

## **CHALLENGES AND OPPORTUNITIES:**



- **Environmental Regulation**
- **Project Planning & Mitigation**
- **Keys to Success**

# AESTHETICS

## THE QUECHEE ANALYSIS (ACT 250)

1. Will a project have an adverse impact on aesthetics and the scenic and natural beauty of an area because it would not be in harmony with its surroundings?
2. Does the project violate a clear, **written community standard** intended to preserve the aesthetics or scenic, natural beauty of the area?
3. Does the project offend the sensibilities of the **average person**?
4. Have the applicants failed to take **generally available mitigating** steps that a reasonable person would take to improve the harmony of the proposed project with its surroundings?

# AESTHETICS

## PROJECT PLANNING AND MITIGATION



- **Siting**
  - The most effective mitigation technique for reducing visual impacts.
  - This includes regional, local, and setback considerations.
- **Alternative Materials**
  - Alternative fencing materials
  - Racking systems color alternatives
- **Screening & Landscaping**
  - Solar is effectively reforesting portions of Ohio and New York.
- **Lighting**
  - Wind and the use of Aircraft Detection Lighting Systems
  - Solar – Reducing offsite light trespass.
- **Visual Offsets**
  - Developing a plan to improve community aesthetics either onsite or offsite.
- **Height Reduction**
  - Minimal effect for wind, but positive results for solar.

# AESTHETICS

## KEYS TO SUCCESS



- Review and understand community standards during site selection.
- Early and frequent community engagement (not required in the Quechee Analysis).
- Individual discussions with abutting landowners.
- Designing a project that attempts to respond to community preferences.

# AESTHETICS KEYS TO SUCCESS



- Engage with a visual assessment professional with experience in the respective state early in the planning phase.
- Design with flexibility in the layout, but don't over-design.
- Assume mitigation will be necessary if there are abutting landowners/resources.



# AESTHETICS

## KEYS TO SUCCESS



- Use existing landscape features to minimize visibility/visual impact.
- Test the concept of fewer/larger versus more/smaller.
- Integrate the concept of community benefit through interpretation, education, public access, and/or recreation.

## SITING AND ENVIRONMENTAL CONSIDERATIONS

IS 100% RENEWABLE ACHIEVABLE FROM A LAND USE PERSPECTIVE?

1. Land required for siting solar arrays at 3 to 6 acres per MW
2. Fewer remaining preferred sites. Vermont and New England is not flat and devoid of vegetation.
3. Balance need for renewables with preservation of water quality.

**PROJECT SITING**

**ENVIRONMENTAL  
PERMITTING**

**Section 248 Criteria – PUC**

- Prevent erosion and protect water quality
- Streams, rivers, floodways, and wetlands
- Natural resources
- Wildlife habitat and "RTE" species

**Agency of Natural Resources Permits**

- Stormwater Operational Permit
- Stormwater Construction Permit
- Wetlands Impact Permit



# ENVIRONMENTAL CONSIDERATIONS



## **Stormwater Runoff**

- Runoff from impervious surfaces – access roads, equipment pads, block ballasts
- Panels/posts NOT considered impervious
- Gravel ballast as pervious alternative

## **Erosion Control**

- Tree clearing for siting and solar gain
- Grading for access roads and to keep panels on 15% slope

## **Wetlands**

- Delineations by qualified ecologists expire after 5 years
- Accurate comprehensive mapping does not exist
- Avoidance of wetland and buffers first

## **Rivers, Streams, and Floodway**

- Avoidance
- Resilience

## KEYS TO SUCCESS



- Early coordination between developer, consultant, and regulating parties on site layout and constraints. Very few sites are similar.
- Project timing is critical due to seasonality for performing required studies.
- Factor additional space for runoff/treatment practices in site selection.

# NOISE

- 100% renewables is 100% achievable while reducing potential noise impacts.
- Requires:
  - Awareness of applicable noise regulations.
  - Careful planning & mitigation.
  - Overcoming challenges: data availability issues and some regulations.

## NOISE REGULATIONS IN NEW ENGLAND

Generally, plan projects to not exceed 40 to 45 dBA. Be aware of extensive post-construction compliance requirements such as those in Vermont.

State	Solar	Wind
VT	No rule with limit. Shouldn't cause "undue adverse effect." ~40 to 45 dBA based on approved applications.	42 dBA daytime 39 dBA nighttime Extensive post-construction compliance requirements
MA	Cannot exceed 10 dBA above ambient $L_{90}$	
ME	55 dBA daytime 45 dBA nighttime Or local limits.	55 dBA daytime 42 dBA nighttime Or local limits.
NH	Varies locally	45 dBA daytime 40 dBA nighttime (or 5 dBA above background $L_{90}$ , whichever is higher)
CT	Varies by land class, but generally 45 dBA to 51 dBA	
RI	Varies locally	NA – Most wind development will be offshore.

## PLANNING & MITIGATION

Engage a qualified acoustical engineer early in the planning phases to understand potential siting and regulatory issues.

Plan to mitigate through equipment selection, siting, pathway intervention, neighbor participation, and new technologies.





## UNDERSTAND THE CHALLENGES

Sometimes regulations require data that is not currently available from manufacturers = risk.

Don't be the bad apple, causing future development to become increasingly difficult.





## EFFECTIVE DELIVERY TECHNIQUES

This is a powerful tool in public speaking. It involves varying pitch, tone, and volume to convey emotion, emphasize points, and maintain interest:

- Pitch variation
- Tone inflection
- Volume control

Effective body language enhances your message, making it more impactful and memorable:

- Meaningful eye contact
- Purposeful gestures
- Maintain good posture
- Control your expressions

**THANK YOU**

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