

# Rethinking Catalina Power: Catalina Island Repower Feasibility Study Virtual Meeting

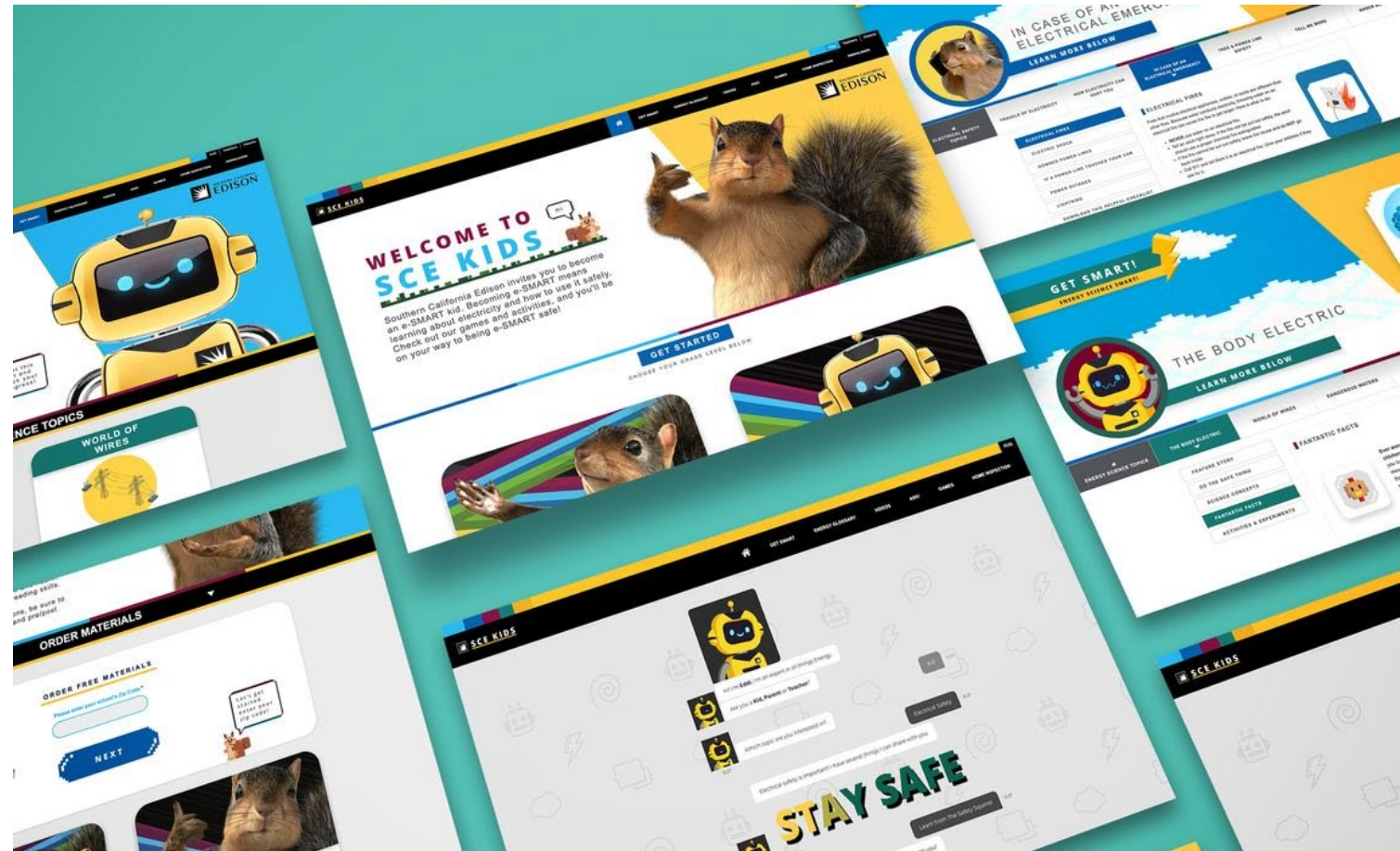
October 8, 2020, 5:00 – 6:00 p.m.

Energy for What's Ahead®



# Safety Moment

- SCE has a newly redesigned kids' website for kids, grades 3 to 10, to learn about the science of electricity and how to stay safe around it.
- Visit [www.sce.com/kids](http://www.sce.com/kids)



## Serving Catalina since 1962

- Power is mainly generated by 6 diesel-fueled locomotive engines, alongside propane-fueled micro-turbines and a battery energy storage system.
- 5 of the 6 engines **do not meet emissions standards** and must be replaced within the next two to three years.

# Thinking Fresh/Starting Over

- Repower study looked at long-term strategies to improve air quality and increase renewable energy use
- Options:
  - Fossil-fuel generation
  - Renewable energy
  - Undersea cable

# OPTION #1

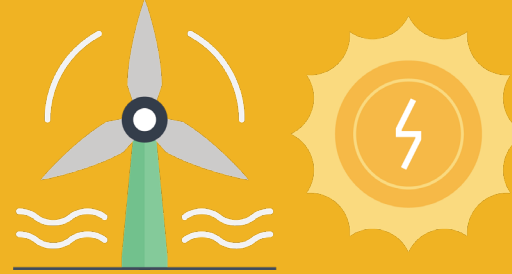
## FOSSIL-FUEL GENERATION



Technology	Phased emissions-compliant diesel generator installation (2 units now, 3 later)	Immediate emissions-compliant diesel engine replacement (5 units now)
Advantages	<ul style="list-style-type: none"><li>• Technology familiar to plant operators</li><li>• Reuse of existing infrastructure</li><li>• Moderate schedule for installation of 2 engines and deadline extension for remaining engines</li></ul>	<ul style="list-style-type: none"><li>• Technology familiar to plant operators</li><li>• Reuse of existing infrastructure</li></ul>
Challenges	<ul style="list-style-type: none"><li>• Uncertainty that engines conforming to new emissions standards are commercially available</li><li>• Requires multiple phases of generator installation</li></ul>	<ul style="list-style-type: none"><li>• Uncertainty that engines conforming to new emissions standards are commercially available</li><li>• Aggressive schedule for installation by regulatory service date</li></ul>
Timing	<b>Less than 2 years (Phase 1)</b>	<b>Less than 2 years</b>
Cost	<b>\$169M</b>	<b>\$169M</b>

# OPTION #2

## RENEWABLE ENERGY



Technology	5% Renewable hybrid solar, energy storage, emissions-compliant diesel generators	High Penetration Renewables	
		60% renewable hybrid solar, energy storage, emissions-compliant diesel generators	100% renewable option solar, energy storage, emissions-compliant diesel generators
Advantages	<ul style="list-style-type: none"> <li>• Reduced annual NOx emissions</li> <li>• No infrastructure upgrades</li> <li>• Familiar technology</li> <li>• Least-cost option for generation on Catalina</li> <li>• Steppingstone to potential wider deployment of renewable energy</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced annual NOx emissions</li> <li>• Grid benefits from potential non-SCE solar projects in Two Harbors</li> </ul>	<ul style="list-style-type: none"> <li>• No annual NOx emissions</li> <li>• Grid benefits from potential non-SCE solar projects in Two Harbors</li> </ul>
Challenges	<ul style="list-style-type: none"> <li>• Uncertainty around land availability</li> <li>• Requires compliant fossil-fuel generation to meet SCAQMD deadline</li> </ul>	<ul style="list-style-type: none"> <li>• Uncertainty around land availability</li> <li>• Environmental permitting depends on locations chosen</li> <li>• Site selection will affect results and costs of upgrades</li> </ul>	<ul style="list-style-type: none"> <li>• Uncertainty around land availability</li> <li>• Environmental permitting depends on locations selected</li> <li>• Site selection will affect results and costs of upgrades</li> </ul>
Timing	<b>~3 years</b>	<b>~8 years</b>	<b>TBD</b>
Cost	<b>\$168M</b>	<b>\$243M</b>	<b>\$458M</b>

## UNDERSEA CABLE



### OPTION #3

#### Technology

**35.5-mile cable clean-burning diesel backup**

#### Advantages

- Could transport renewable energy from the mainland

#### Challenges


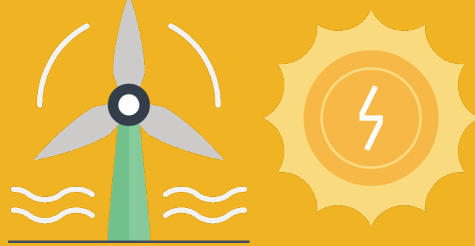

- Extensive environmental permitting
- Does not include redundant cabling
- Requires upgrades to the existing mainland/island substations and routing infrastructure
- Susceptible to extreme mechanical and environmental exposure or damage
- Repairs may be very costly or unavailable

#### Timing

**~5 years**

#### Cost

**\$334M**

Options	<b>FOSSIL-FUEL GENERATION</b> 		<b>RENEWABLE ENERGY</b> 			<b>UNDERSEA CABLE</b> 
Technology	Phased emissions-compliant diesel generator installation <ul style="list-style-type: none"> <li>• 2 units now</li> <li>• 3 later</li> </ul>	Immediate emissions-compliant diesel engine replacement <ul style="list-style-type: none"> <li>• 5 units now</li> </ul>	5% Renewable hybrid solar, energy storage, emissions-compliant diesel generators	<b>High Penetration Renewables</b>		35.5-mile cable clean-burning diesel backup
	<b>60% renewable hybrid</b> solar, energy storage, emissions-compliant diesel generators	<b>100% renewable option</b> solar, energy storage, emissions-compliant diesel generators				
Timing	<b>Less than 2 years (Phase 1)</b>	<b>Less than 2 years</b>	<b>~3 years</b>	<b>~8 years</b>	<b>TBD</b>	<b>~5 years</b>
Cost	<b>\$169M</b>	<b>\$169M</b>	<b>\$168M</b>	<b>\$243M</b>	<b>\$458M</b>	<b>\$334M</b>



## Takeaways

- Only feasible timely approach is to replace existing generators with new, much cleaner, emissions-compliant diesel generators.
- NOx emissions can be reduced by at least 63% in the near-term.
- Adding some solar energy and additional battery storage can decrease the project's cost over 30 years.

## Next Steps

- We will begin the public permitting process with SCAQMD to replace the current diesel generators
  - Filing expected this year
- We are **committed** to keeping you **informed**

## For More Information

The Catalina Island Repower Feasibility Study, appendices, and summaries can be found on the project website:

**[www.sce.com/catalinarepower](http://www.sce.com/catalinarepower)**