



# Hydroelectric Power Plant Upgrades

Engineering & Operations Committee

Item 8-1

September 10, 2018

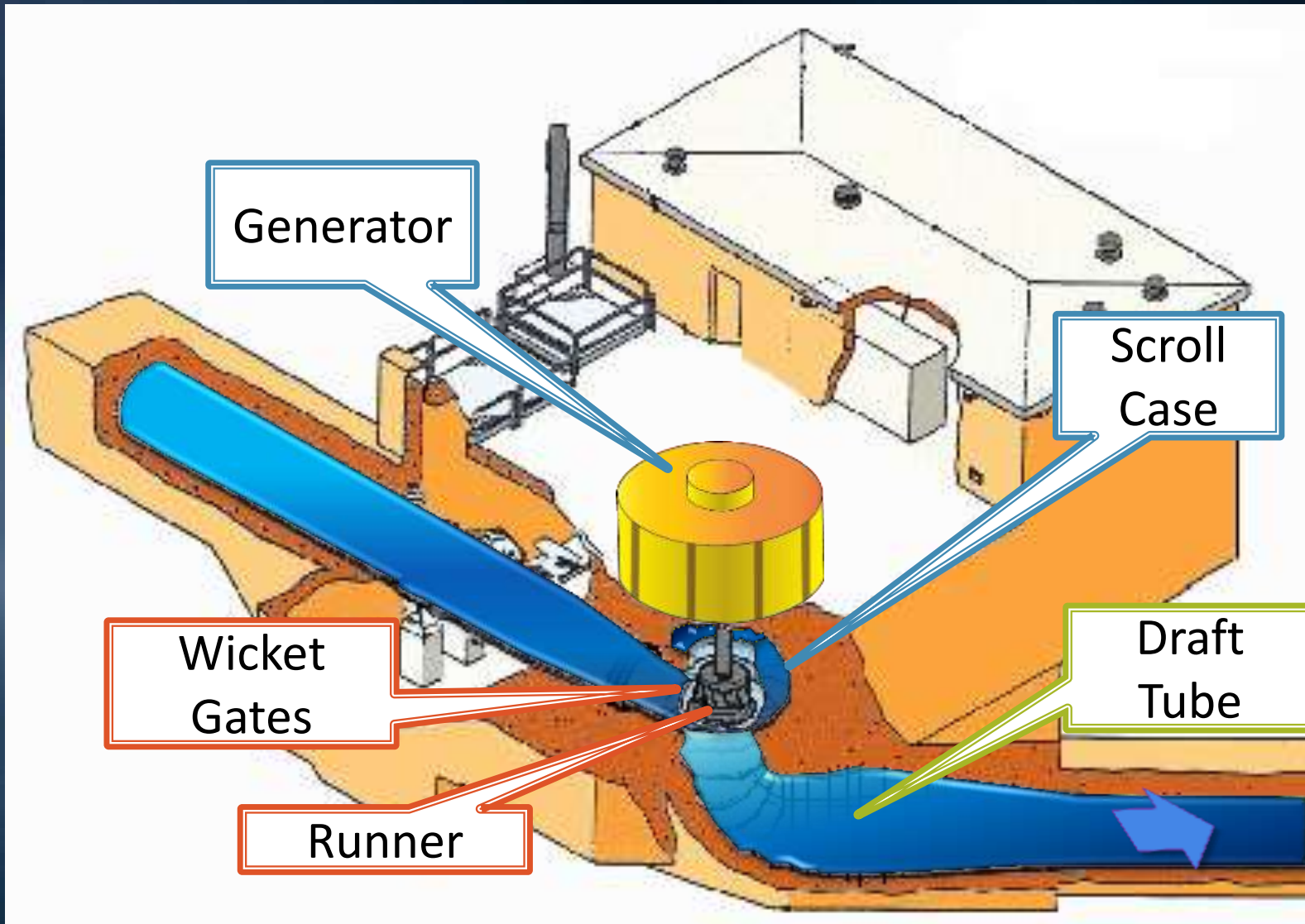
# Current Action

- Appropriate \$6.68 M
- Authorize design & construction to rehabilitate Red Mountain Power Plant
- Authorize final design & procurement to rehabilitate Foothill Power Plant
- Authorize completion activities for the modification of Yorba Linda Power Plant

# Distribution System



# Francis Turbine Generator



# 1. Red Mountain Power Plant

- Constructed in 1986
- Located on San Diego Pipeline No. 5 in Fallbrook
- Receives water from Lake Skinner
- 5.9 MW – one reaction turbine
- Annual revenue: \$1M to \$2M



# 1. Red Mountain Power Plant Background

- Existing conditions
  - Major components exhibiting signs of wear



Corroded mechanical seal & turbine shaft



Corrosion on wicket gate operator

# 1. Red Mountain Power Plant Rehabilitation

## Scope of Work

- Design phase activities
  - Field investigations
  - Drwgs. & specifications
  - Procurement of mechanical components



# 1. Red Mountain Power Plant Rehabilitation

## Scope of Work

- Metropolitan construction force
  - Disassembly & reassembly
  - Installation of refurbished components
  - Testing & recommissioning
- Specialty contractors
  - Refurbishment of turbine components
  - New lubrication system
  - Contracts under GM's authority



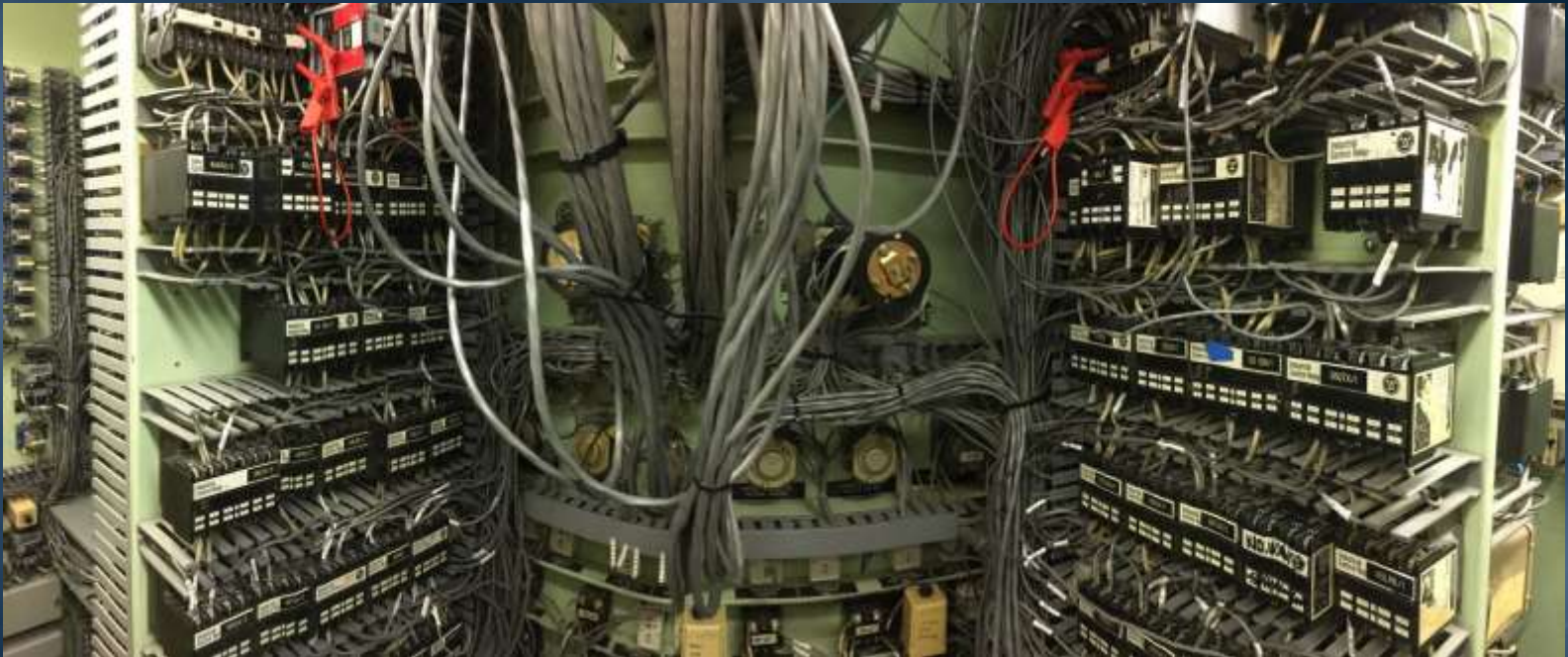
## 2. Foothill Power Plant

- Constructed in 1981
- Located adjacent to Castaic Lake
- Receives water from State Water Project
- 9.1 MW – two reaction turbines
- Annual revenue: \$2M to \$3.5M



## 2. Foothill Power Plant Background

- Existing conditions
  - Turbine's mechanical components are showing wear
  - Instrumentation, control & electrical equipment is failing



Current control relays at Foothill HEP

# 2. Foothill Power Plant Rehabilitation

## Scope of Work – Turbine Rehabilitation

- Metropolitan staff –design
  - Field investigation & condition assessment
  - Drwgs. & specifications
  - Procurement of mechanical components



Foothill Unit #1

## 2. Foothill Power Plant Rehabilitation

### Scope of Work – Instrumentation and Control Equipment Upgrades

- Stantec Consulting Services, Inc.
  - Drwgs. & specifications for instrumentation & control equipment
  - Instrumentation & control equipment selection
  - Construction cost estimate
- Value Engineering firm

# 3. Yorba Linda Power Plant

## ● Background

- Power plant modifications contract completed in March 2018
- Receives water from SWP & CRA
- 5 MW - one reaction turbine
- Expected annual revenue: \$1M to \$2M



## ● Completion Activities

- Procure spare parts
- Integration of the plant's control system with SCADA
- Installation of an enclosure for generator components
- Extend plant's public address system

# Requested Funds

## Labor

	Red Mtn.	Foothill	Yorba Linda
Owner's Cost	\$ 92,000	\$ 240,000	\$ 80,000
Preliminary Design	-	-	220,000
Final Design	280,000	264,000	390,000
Submittal Review	122,000	-	-
Materials & Supplies –Procurement	508,000	-	268,000
Met Force Construction	2,208,000	-	-
Equipment Use & Incidental Expense	14,000	-	-
Professional Services			
Stantec Consulting Services Inc.	-	145,000	-
Material Testing	-	30,000	-
Value Engineering	-	55,000	-
Specialty Contractors	765,000	-	-
Remaining Budget	650,000	186,000	142,000
Subtotal	\$4,660,000	\$920,000	\$1,100,000

**Total : \$6.68 M**

# Schedule



**Board Action**



**Design**



**San Diego Pipeline No. 5 Shutdown**



**Completion**



**Construction**

# Board Options

## ● Option #1

- Adopt CEQA determination that the proposed action is categorically exempt
- Appropriate \$6.68M
- Authorize design & construction to rehabilitate Red Mountain Power Plant, and
- Authorize final design & procurement to rehabilitate Foothill Power Plant, and
- Authorize completion activities for the modification of Yorba Linda Power Plant

## ● Option #2

- Do not proceed with the improvements at this time



# Staff Recommendation

- Option #1

