Exhibit to Agenda Item #1c

Board Finance & Audit Committee Meeting and Special SMUD Board of Directors Meeting – Budget 2020
Wednesday, November 6, 2019, scheduled to begin at 5:00 p.m.
Customer Service Center, Rubicon Room
Energy Delivery
2020 Proposed Budget & Initiatives

Frankie McDermott
Chief Energy Delivery Officer
## Energy Delivery
### Business Segments and Functions

<table>
<thead>
<tr>
<th>Power Generation</th>
<th>Line Assets</th>
<th>Substation, Telecom &amp; Network</th>
<th>Commercial Development</th>
<th>Strategic Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro Generation</td>
<td>New Services/Local Agency</td>
<td>Substation Design &amp; Construction</td>
<td>Commercial/Mixed Use Developers</td>
<td>Business Process Solutions</td>
</tr>
<tr>
<td>License Implementation</td>
<td>Line Maintenance</td>
<td>Substation / Network Maintenance &amp; Hazardous Material</td>
<td>Home Builders</td>
<td>Sacramento Power Academy</td>
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<tr>
<td>Thermal Generation</td>
<td>Line Design, Construction, &amp; Replacement</td>
<td>Telecommunications</td>
<td>Brokers</td>
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<tr>
<td>Renewable Generation</td>
<td>Vegetation Management</td>
<td>Field Metering &amp; Power Quality</td>
<td></td>
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<tr>
<td>Gas Pipeline</td>
<td></td>
<td>Civil Engineering &amp; Const. Management Inspection</td>
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<tr>
<td>Regulatory Compliance</td>
<td></td>
<td>Transmission Engineering</td>
<td></td>
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<tr>
<td>Rancho Seco Fuel Storage</td>
<td></td>
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</tr>
<tr>
<td>Project Development</td>
<td></td>
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</tbody>
</table>
2020 Proposed Budget by Theme

2020 Proposed

$M

Keeping the Lights On Optimization/Operational Excellence Risk Mitigation Embracing the Future

Allocated Costs

2020 Proposed

$504.6

$328.1

$91.1

$47.8

$31.3

$6.3

$-$

$-100

$200

$300

$400

$500

$-
Keeping the Lights On

- Safety and the Pursuit of Zero Injuries (SD-6)
- Grid Substation Improvements & New Capacity: Substation E and Substation G (SD-4)
- Proactive Retirement and Replacement of Circuit Breakers and Transformers (SD-4)
- White Rock Tunnel Bolt Replacement (SD-4)
- Hydro Generation Equipment and Maintenance (SD-4)
Keeping the Lights On

- Cable & Pole Replacement Work (SD-4)
- Vegetation Management (SD-4)
- Downtown 21kV Projects (SD-4)
- Rancho Seco Switchyard Expansion (SD-4)
Optimization and Operational Excellence

Demonstrated cost savings and examples of our continued focus on Operational Excellence (SD-2, SD-4)

- Vegetation Management
- GO-165 Corrective Maintenance
- Cable Replacement (including emergency)
- Under Ground Fault Repairs
- Pole Replacement
- Annual Line Patrol
- Field Force Training Process Efficiency gains
- Equipment Efficiency improvements at Cosumnes Power Plant (e.g. ECOMAX, TRU-CURVE, Combustion Hardware)
- Aux Boiler Operations (SCA – Procter Co-Gen, CVFA – Carson Co-Gen)
- Solano 2 Wind Turbine Efficiency
- Advanced Gas Path & DLN 2.6+ upgrades at Cosumnes Power Plant (CPP)

2017 to 2021 Forecasted Savings of $40.2M

November 6, 2019
Optimization and Operational Excellence

- Light Detection and Ranging (LiDAR) (SD-4,10,17)
- Pole Test Resistograph (SD-4,10,17)
- White Rock Control Upgrades (SD-4)
- South Fork Powerhouse (SD-4)
- Upper American River Project (UARP) Dissolved Gas Analyzers & Bushing Monitoring (SD-4)
Optimization and Operational Excellence

- Workforce Optimization (WFO) improvement projects in support of Energy Delivery and Customer Service:
  - Streamline business processes
  - Automate manual processes, increase workforce productivity, and support mobility in the field resulting in cost savings
  - Reduce redundancy, increase efficiency and enhance compliance reporting
  - Improve the employee experience
  - Maximize resource utilization and effectiveness

Scheduling and Mobility Future State Workflow & Integration with ClickSoftware
Risk Mitigation

- Wildfire Mitigation Projects:
  - Upper American River Project (UARP) Fuel Reduction & Easement Widening
  - State Responsibility Area (SRA) Hardening
  - Light Detection and Ranging (LiDAR) Surveys
- Hydro License Implementation Cost

(SD-4,6,17)

(SD-4,9,17)
Risk Mitigation

- Transmission Line Splice X-Ray  
  (SD-4,17)

- Powerhouse & Switchyard Grounding Work  
  (SD-4,17)

- Loon Lake Fire Protection  
  (SD-4,17)

- Rancho Seco Nuclear Fuel Storage  
  (SD-7,17)
Embracing the Future

- Renewable project development such as Solano Wind, and Rancho Seco Photovoltaic Solar (PV2) (SD-2,4,7,9)
- Removing barriers to new service connections (SD-4,5)
- Execution of Integrated Resource Plan (IRP) defined projects (e.g. Hedge Battery Storage) (SD-2,4)
Embracing the Future

- The way we manage work will change (Workforce Optimization) (SD-2,4)
- Improved customer notification for SMUD work (SD-5)
- Commercial Development (SD-4,5,13)
- Sacramento Power Academy (External) (SD-6,19)

Development Projects Driving SMUD Infrastructure Upgrades (e.g. 800 K Street)
Climbing Workshop at the Sacramento Power Academy
SMUD Board of Directors Recognizing the Line Crew Workers Who Helped Establish Electrical Service for the Navajo Nation
Energy Delivery
2020 Proposed Budget

November 6, 2019
Exhibit to Agenda Item #2a,b,c,d,e,f

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Customer Service Center, Rubicon Room
Energy Delivery – Power Plant JPAs

Major Objectives

▪ Provide electrical power in accordance with SMUD’s dispatch and per the applicable Power Purchase Agreement (PPA).

▪ Provide steam to the steam host per the applicable agreement (Commodity / Thermal / Steam Sales).

▪ Maintain debt service payments per the applicable Bond Indenture Agreement.

Management

▪ All four JPA’s are supported through SMUD staff and management.

▪ Operations and Maintenance (O&M) at all four JPA’s are conducted through O&M services contracts. Ethos Energy Power Plant Services has the contract for all plants; Carson Ice (CVFA), Procter & Gamble (SCA), Campbell Soup (SPA), including McClellan and Cosumnes (SFA).
## Energy Delivery

### 2020 JPA Budget Summary

**November 6, 2019**

**Board Finance & Audit Committee Meeting and Special SMUD Board of Directors Meeting – Budget 2020**

<table>
<thead>
<tr>
<th>Expenses</th>
<th>CVFA (Carson)</th>
<th>SCA (Procter &amp; Gamble)</th>
<th>SPA (Campbell’s &amp; McClellan)</th>
<th>SFA (Cosumnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>O&amp;M</td>
<td>Interest, Principal &amp; Distribution Expenditures</td>
<td>O&amp;M</td>
<td>Interest, Principal &amp; Distribution Expenditures</td>
</tr>
<tr>
<td>Total Fuel</td>
<td>$10,708,677</td>
<td>$21,001,837</td>
<td>$19,225,399</td>
<td>$154,489,789</td>
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<tr>
<td>Total Plant O&amp;M</td>
<td>$5,821,173</td>
<td>$8,309,046</td>
<td>$9,366,848</td>
<td>$14,123,392</td>
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<tr>
<td>Total Administrative &amp; General</td>
<td>$1,551,593</td>
<td>$1,646,555</td>
<td>$1,601,677</td>
<td>$2,353,121</td>
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<tr>
<td>Interest on Bonds</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$5,822,000</td>
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<tr>
<td>Bond Principal Repayment</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$9,805,000</td>
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<tr>
<td>Plant Betterments / Capital Expenditures</td>
<td>$949,081</td>
<td>$0</td>
<td>$0</td>
<td>$1,365,000</td>
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<tr>
<td>TOTAL</td>
<td>$18,081,443</td>
<td>$30,957,438</td>
<td>$30,193,924</td>
<td>$170,966,302</td>
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</table>

<table>
<thead>
<tr>
<th>JPA</th>
<th>2019</th>
<th>2020</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Generation (MWh)</td>
<td>Total O&amp;M expenses (incl. fuel)</td>
<td>Cost, $/MWh</td>
</tr>
<tr>
<td>CVFA (Carson Ice)</td>
<td>343,863</td>
<td>$23,408,845</td>
<td>$68.08</td>
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<tr>
<td>SCA (P&amp;G)</td>
<td>760,778</td>
<td>$32,420,974</td>
<td>$42.62</td>
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<tr>
<td>SPA (Campbell’s &amp; McClellan)</td>
<td>915,647</td>
<td>$38,298,951</td>
<td>$41.83</td>
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<tr>
<td>SFA (Cosumnes)</td>
<td>3,452,054</td>
<td>$136,848,465</td>
<td>$39.64</td>
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</table>
Northern California Gas Authority No.1 (NCGA No.1)

- Created in 2007 as joint powers agency for a prepaid gas transaction in support of commodity purchases.
- Board Authorizes debt service and authorizes payments.
- Created in 2018 as joint powers agency for a prepaid gas transaction in support of commodity purchases.
- Board Authorizes debt service and authorizes payments.