



Review of Water Treatment Plant Operating Capacities

Engineering and Operations Committee

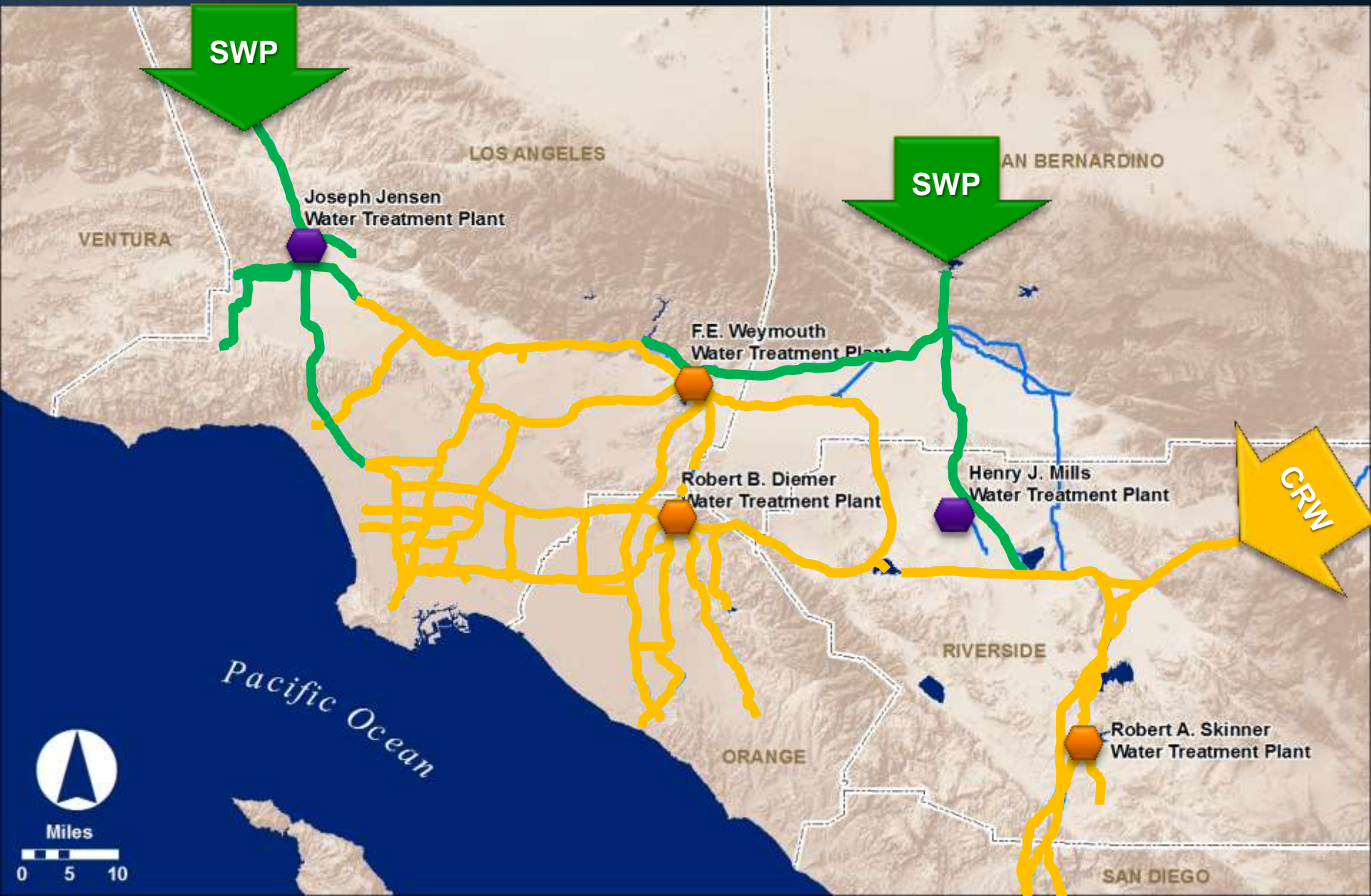
Item 6a

February 13, 2017

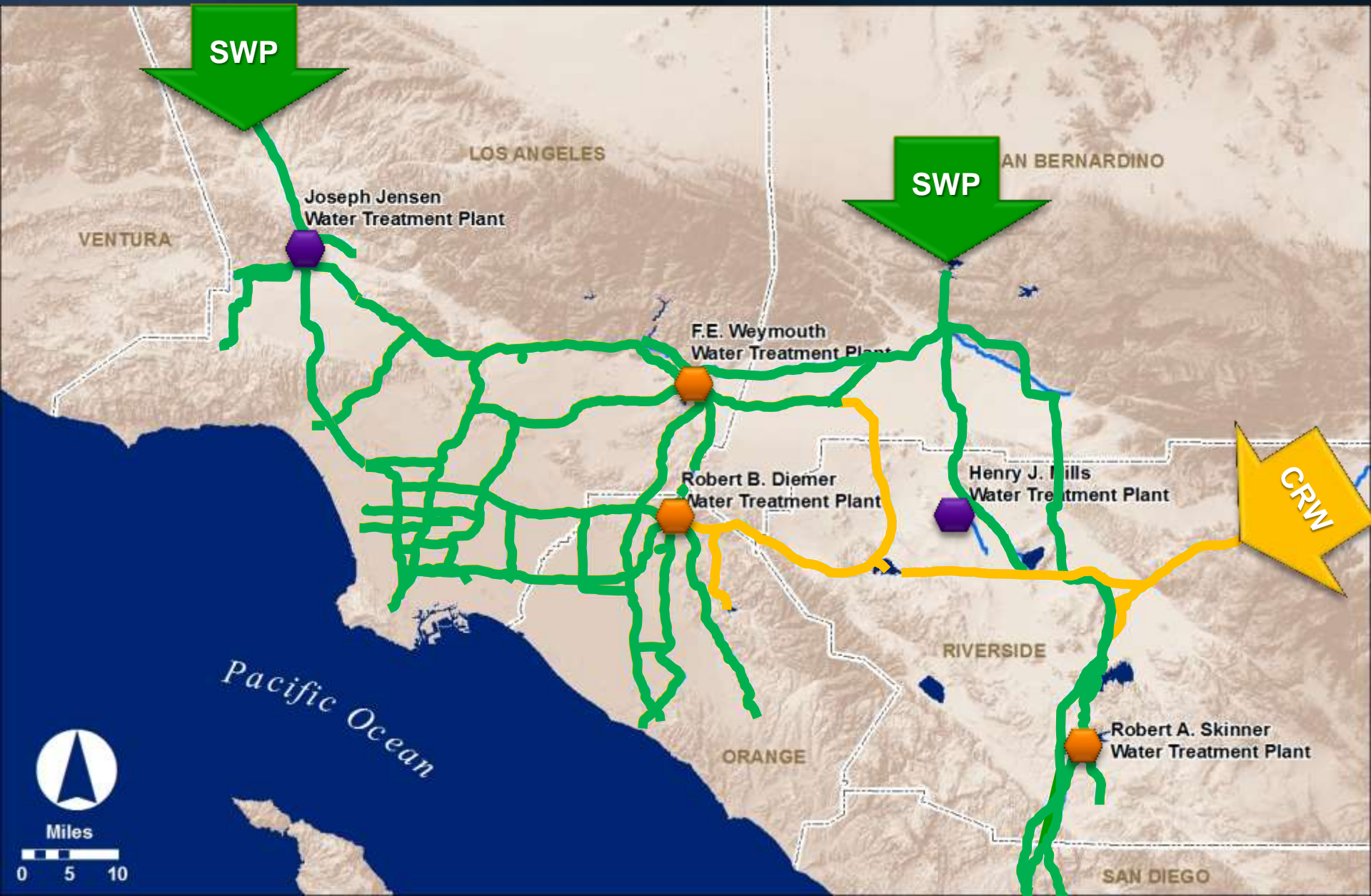
Topics

- Water system overview
- Historical water treatment plant flows
- Evaluation of treatment plant capacities
- Recommendations for the Skinner and Jensen Plants

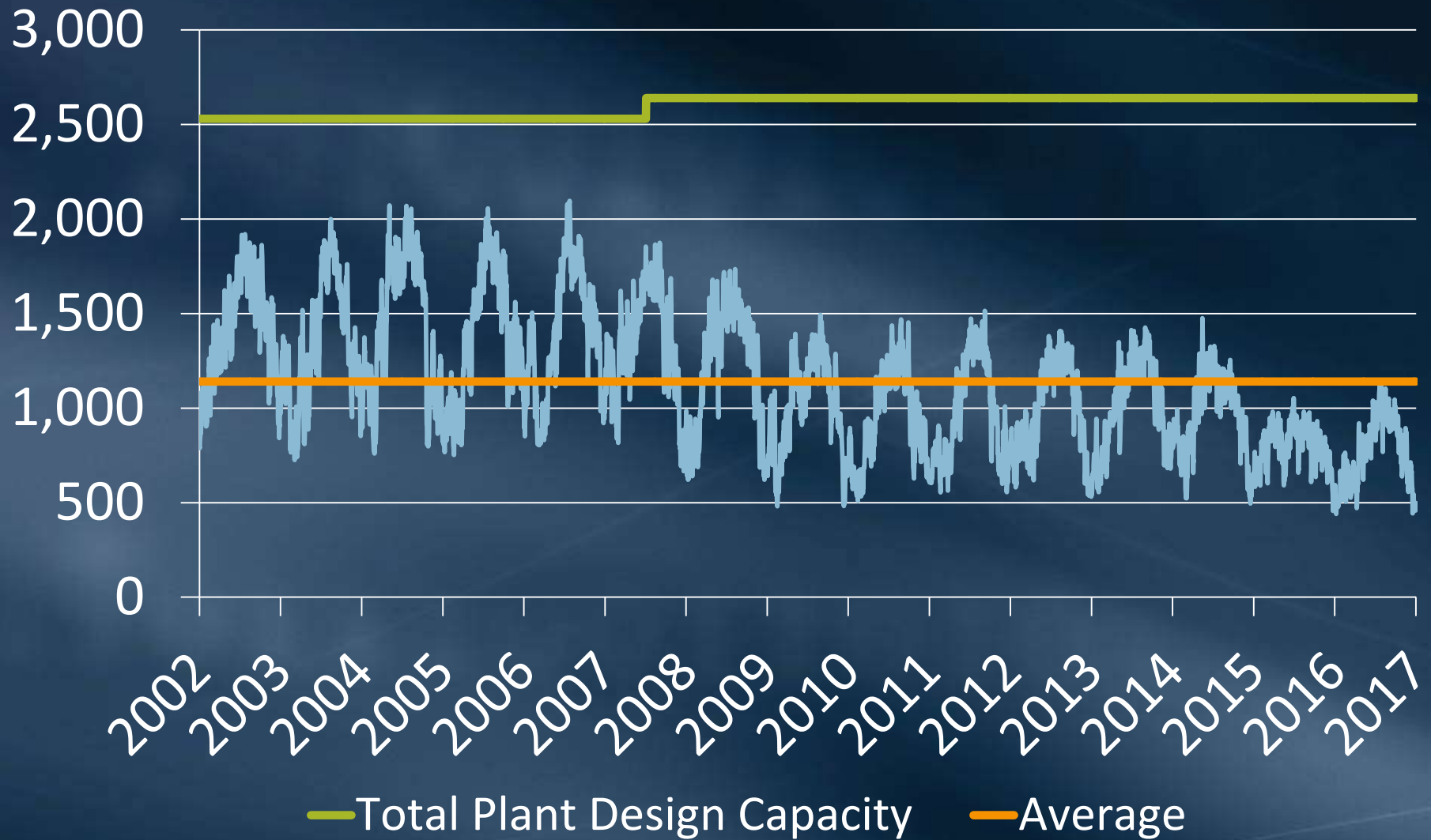
Minimize SWP Operation



Maximize SWP Operation

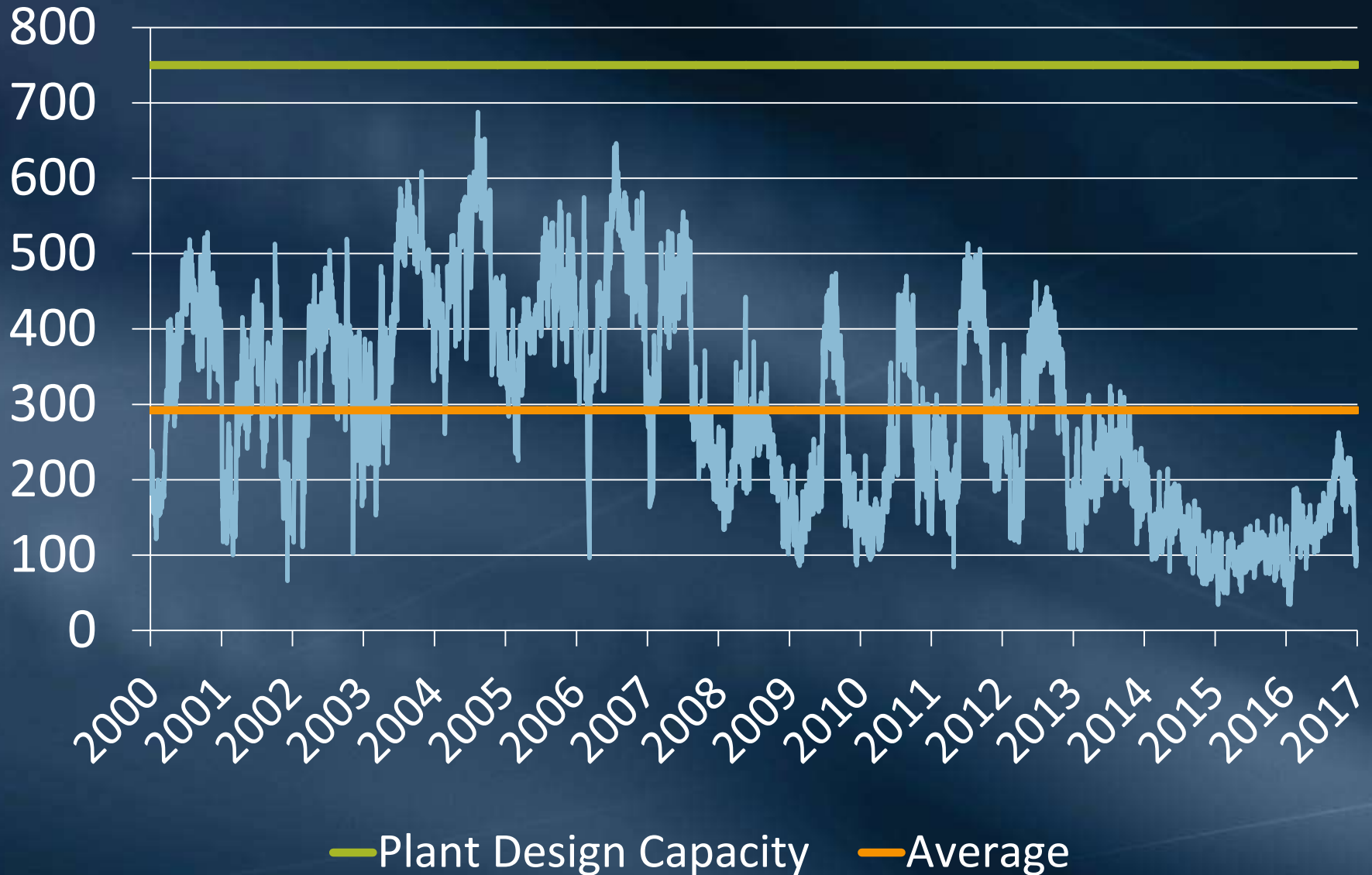


Combined Peak Daily Effluent (mgd)

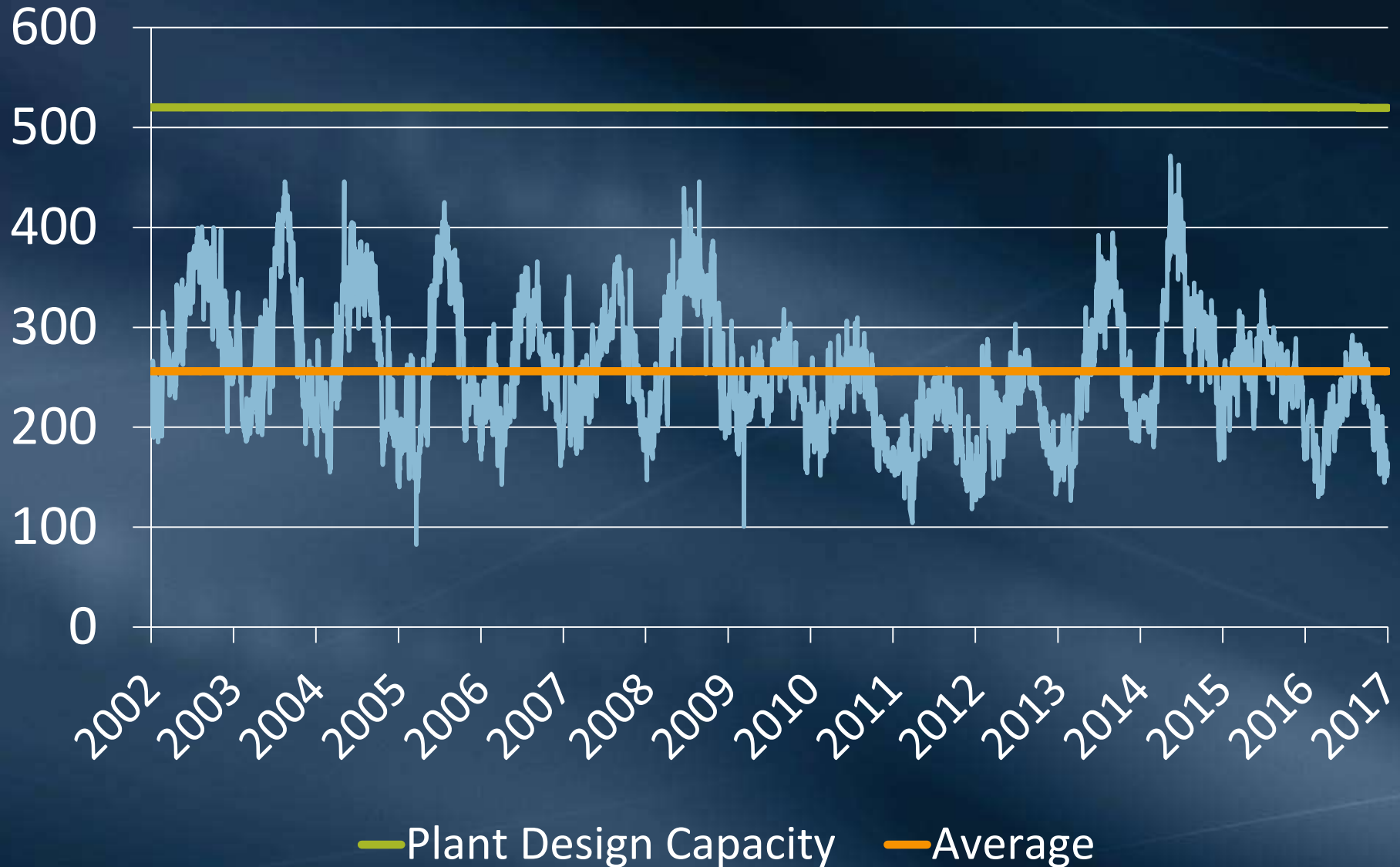


Non-coincident peak flow

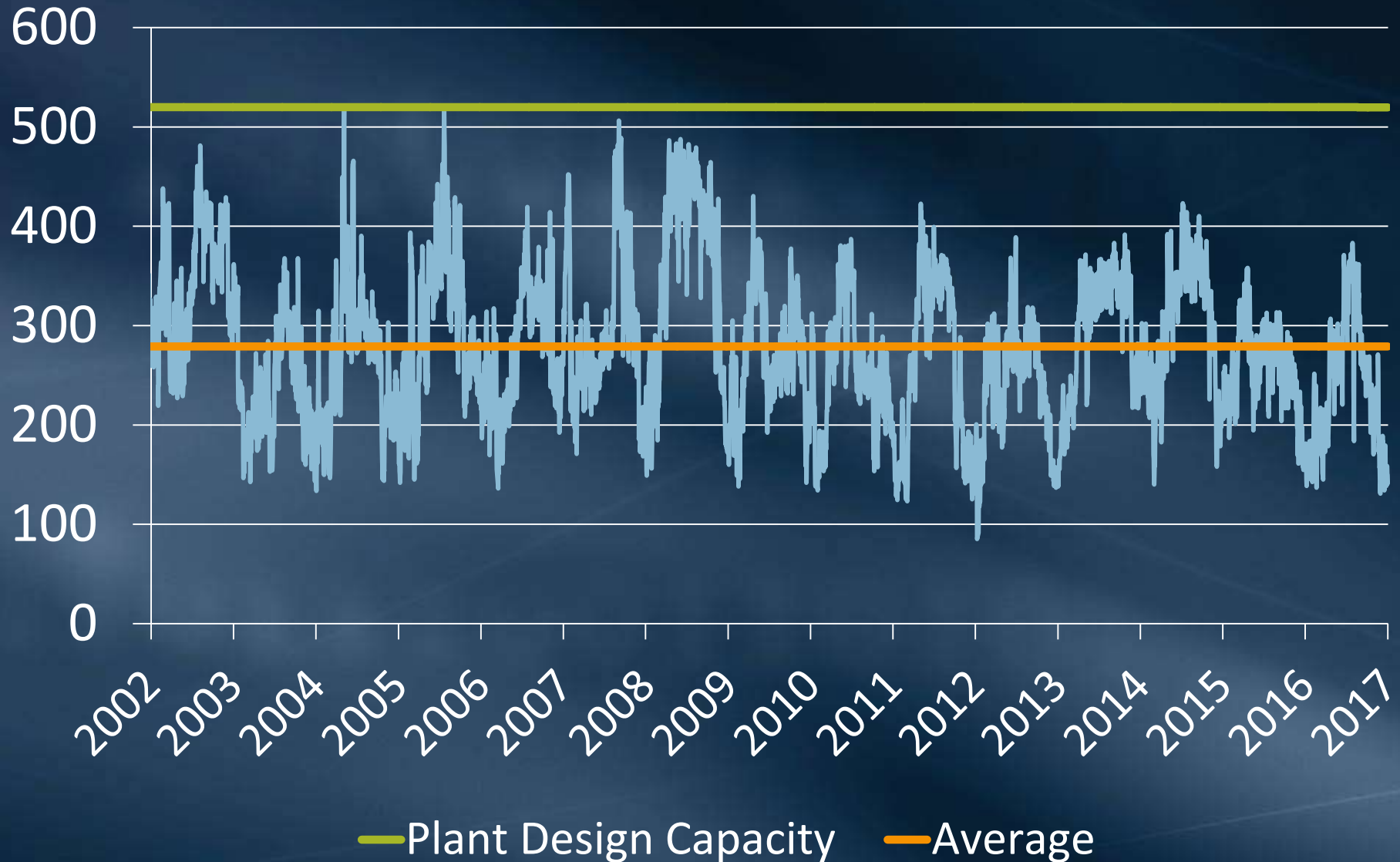
Jensen Peak Daily Effluent (mgd)



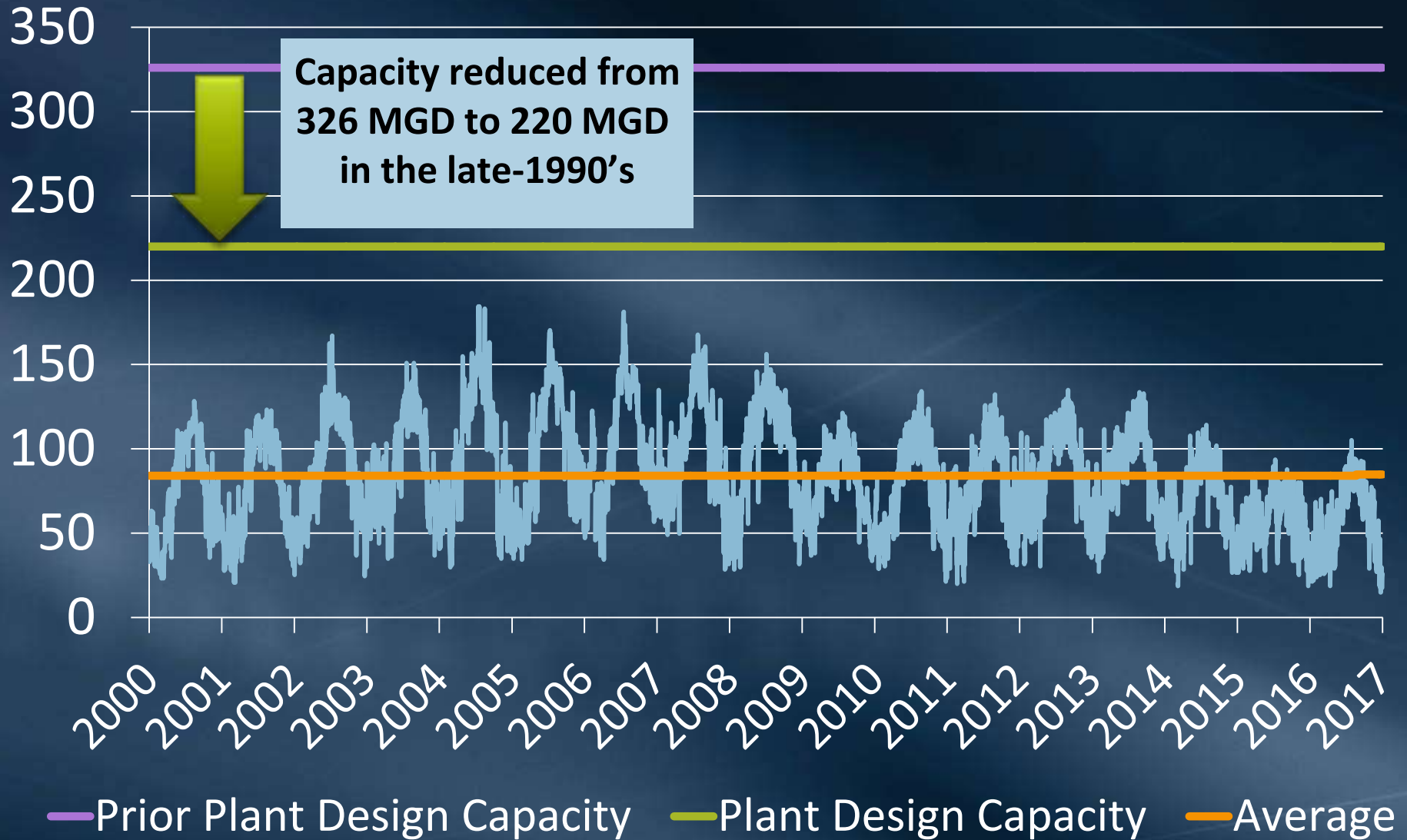
Weymouth Peak Daily Effluent (mgd)



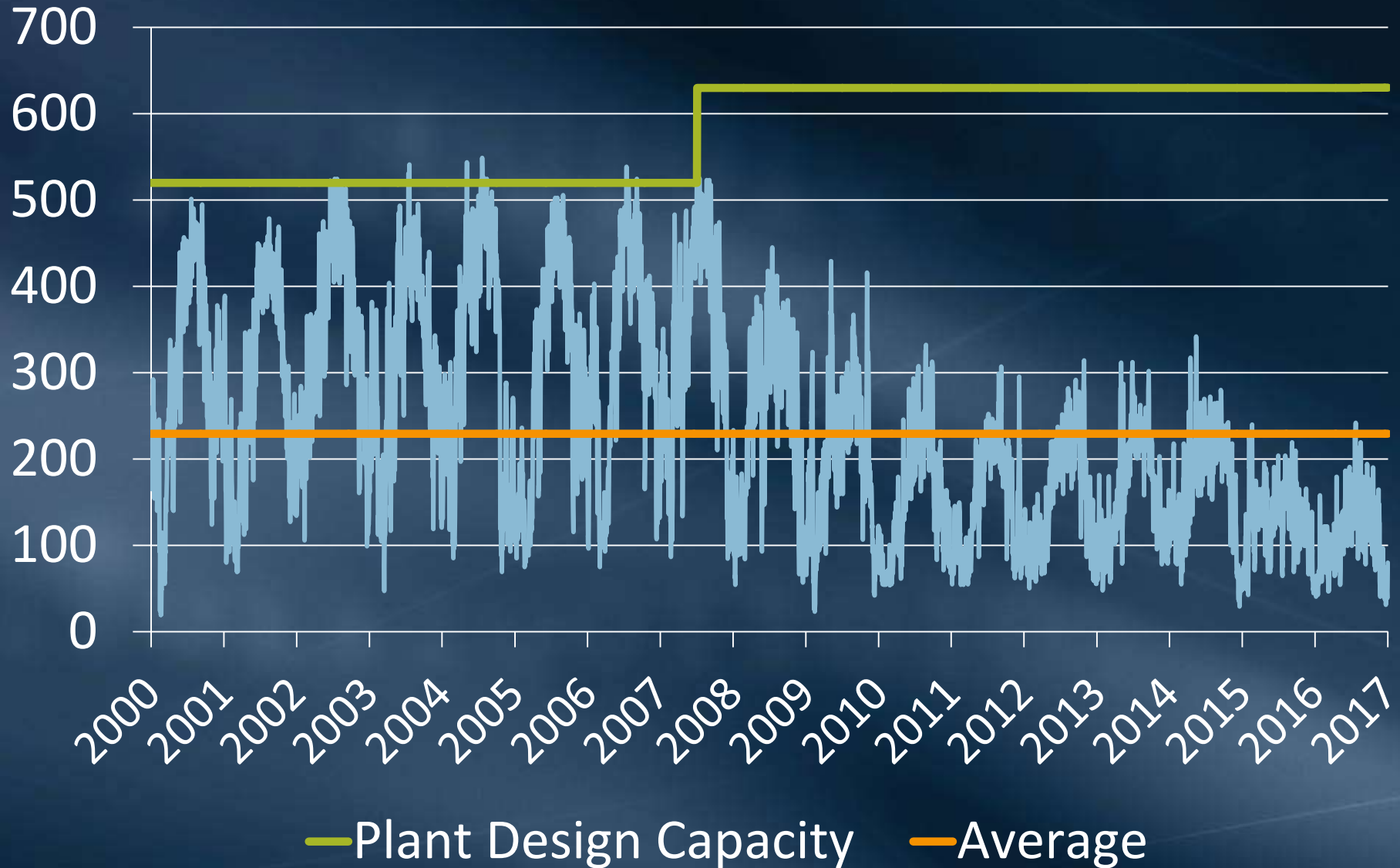
Diemer Peak Daily Effluent (mgd)



Mills Peak Daily Effluent (mgd)

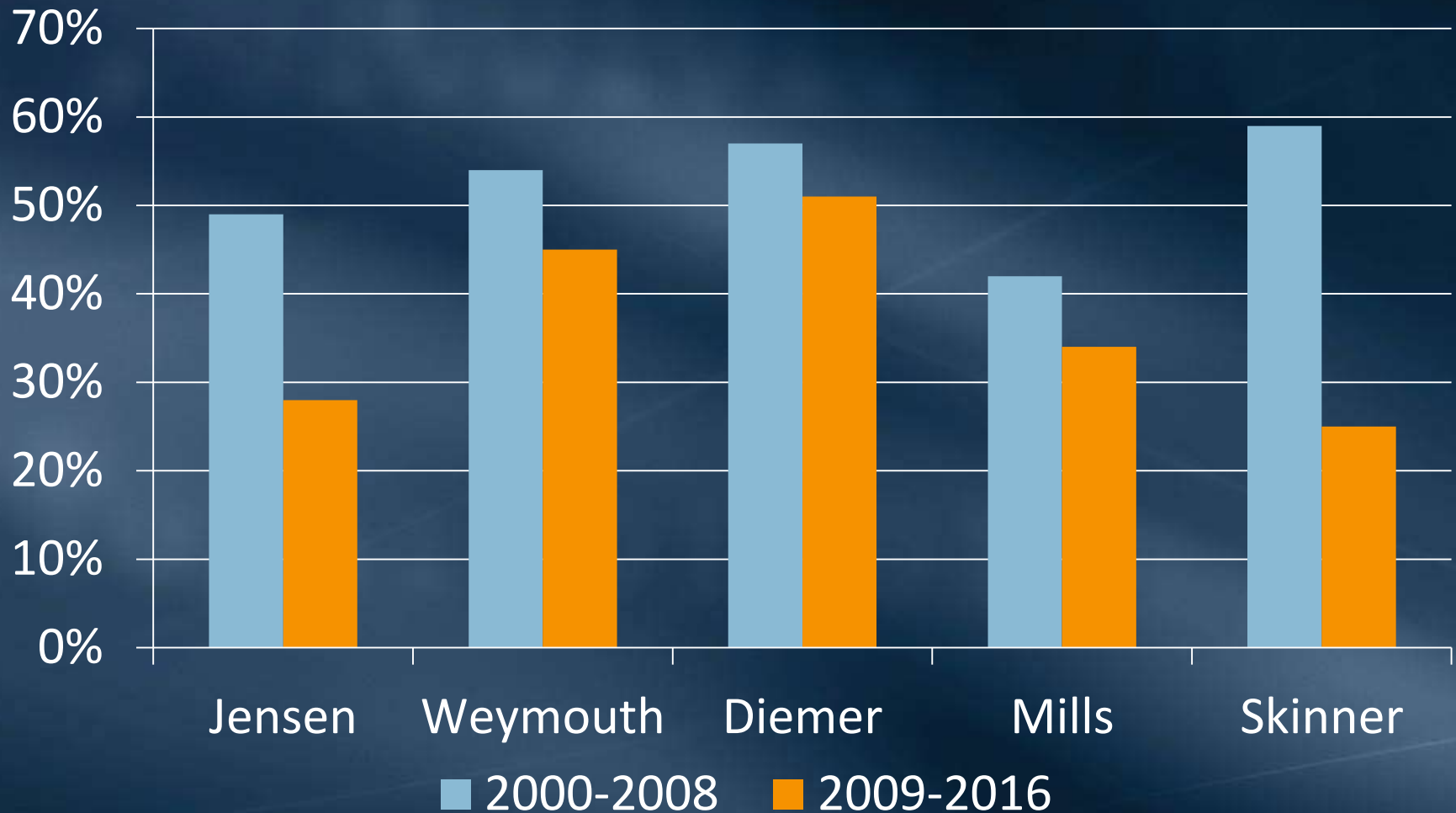


Skinner Peak Daily Effluent (mgd)



WTP Utilization has Declined

% Utilization = Peak Daily Average / Capacity



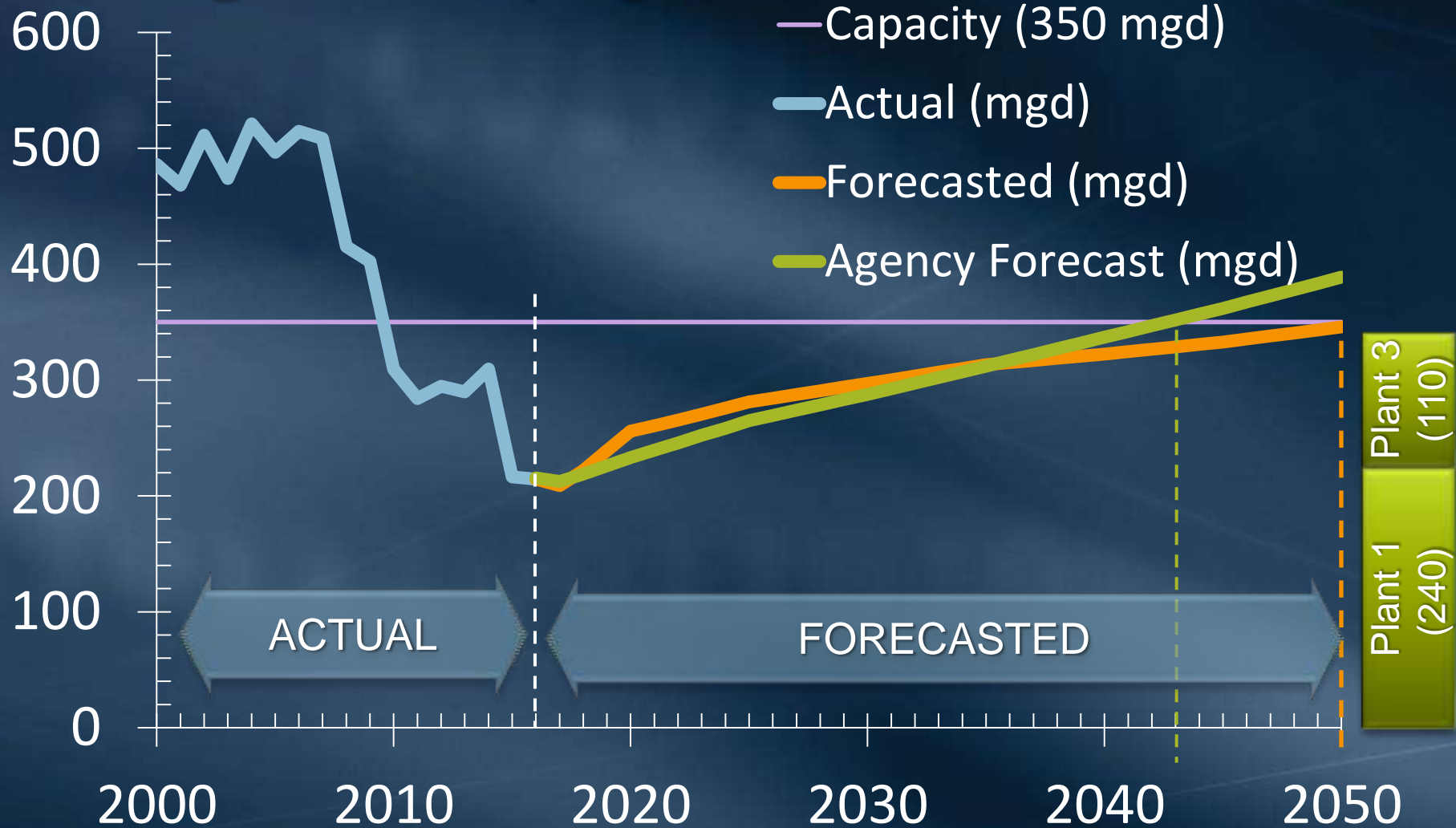
Evaluation of Treatment Plant Capacities

Plant	Area Served	Evaluation Status	Capacity
Mills	Local Mills Area	Complete	220 MGD
Skinner	Local Skinner Area	Complete	350 MGD (proposed)
Jensen	Common Pool and Local Jensen Area	In-progress	In-progress
Diemer	Common Pool and Local Diemer Area	Complete	520 MGD
Weymouth	Common Pool and Local Weymouth Area	Complete	520 MGD

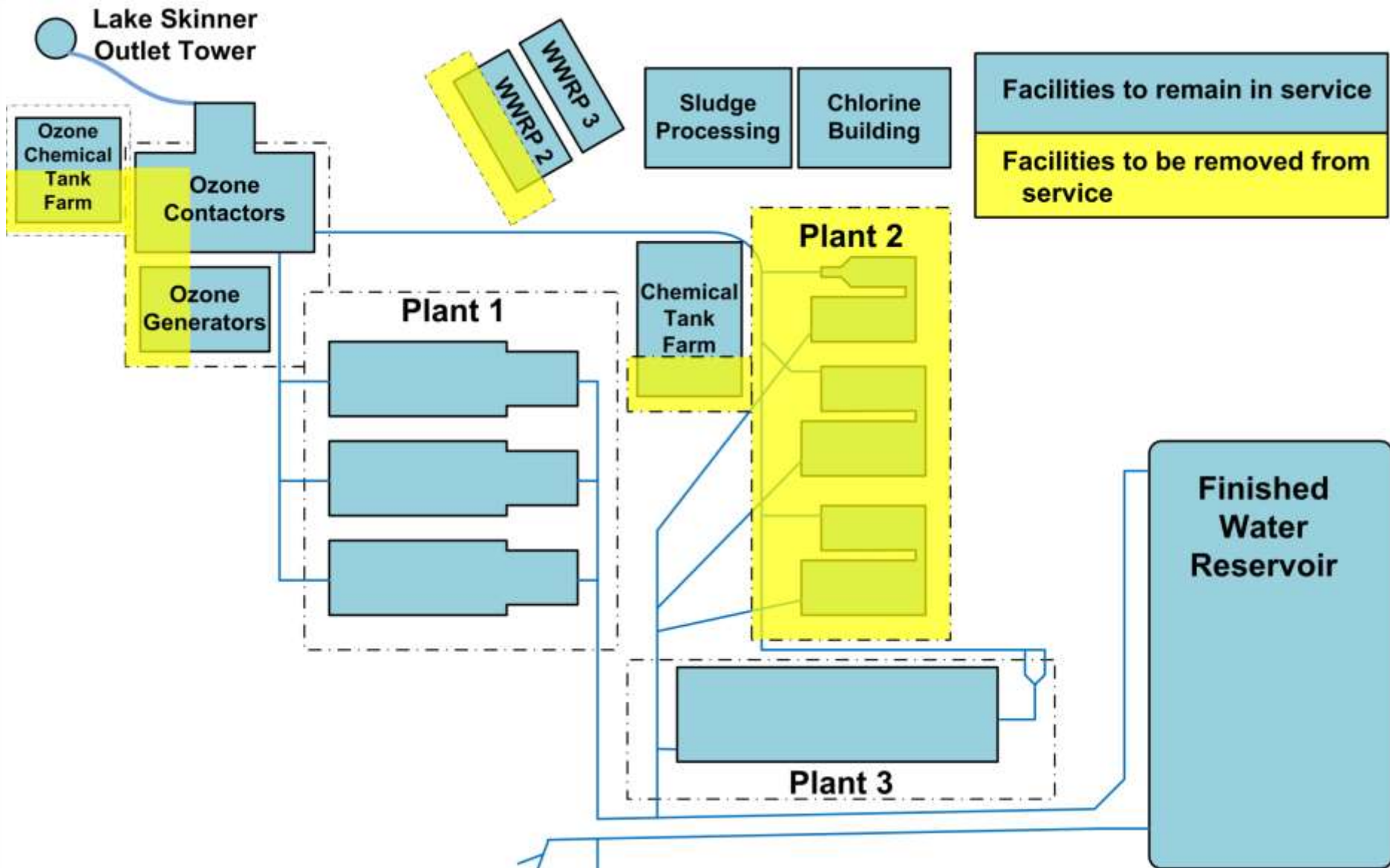
Skinner Flow Capacities

Plant	Module	Module Design Capacity (mgd)	Plant Design Capacity (mgd)
Plant 1	1	75	240
	2	75	
	3	90	
Plant 2	4	80	280
	5	100	
	6	100	
Plant 3	7	110	110









Maximum Daily Skinner Plant Flows through 2050 (mgd)



Skinner Treatment Plant



O&M Impacts Associated with Removing Skinner Plant 2 from Service

Item	Cost Impact
Ozone (LOX and Electricity)	
Electricity	
Maintenance Labor	
Maintenance Materials & Supplies	
Operations Labor	
Chemicals	
Solids (Sludge) Disposal	
Overall Cost Impact	

Capital Improvement Projects Avoided at Skinner Plant Over Next 30-years

Project Type	Cost (\$)
Instrumentation	1,541,000
Control System	2,092,000
Mechanical/Electrical	7,935,000
Filters	6,560,000
Piping	872,000
Total	19,000,000

Other Considerations for Removing Skinner Modules from Service

- Time to respond to large flow changes will increase
- Revisions to operating permit required
- One-time cost of removing facilities from service
- Time and cost to return decommissioned facilities to service in the future

Next Steps

- Remove Skinner Plant 2 from service this year
- Coordinate with Member Agencies and update Jensen demand projections
- Evaluate feasibility of removing Jensen plant modules from service
- Provide updates to the Board



THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

MINUTES

EXECUTIVE COMMITTEE

June 27, 2017

Chair Record called the meeting to order at 12:01 p.m. in the Board Room at Metropolitan's Headquarters.

Members present: Chair Record, Vice Chairs Ackerman, De Jesus, and Gray, Secretary Blois, Directors Barbre, Hogan, Kurtz, Quiñonez, and Wunderlich.

Members absent: Vice Chair Murray, and Directors Camacho, Dick, and Peterson.

Other Board members present: Abdo, Ballin, Dake, Dear, Lewinger, Morris, McKenney, Paskett, Saxod, Steiner, and Treviño.

Staff present: Beatty, L. Carrillo, Castro, Ghaly, Kightlinger, Mares, Riss, Scully, Tubbs, and Zinke.

1. OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO ADDRESS THE COMMITTEE ON MATTERS WITHIN THE COMMITTEE'S JURISDICTION

No members responded.

2. APPROVAL OF THE MINUTES OF THE EXECUTIVE COMMITTEE MEETING HELD May 23, 2017.

Motion: Carried

Moved: Director Murray Seconded: Director Camacho

Ayes: Directors Record, Ackerman, Barbre, Blois, De Jesus, Gray, Hogan, Kurtz, Quiñonez, and Wunderlich

Noes: None

Abstentions: None

Absent: Directors Murray, Camacho, Dick, and Peterson

The motion passed by a vote of 10 ayes, 0 no, 0 abstain, and 4 absent.

3. CHAIRMAN'S REPORT

- a. Subject: Subcommittee of Audit and Ethics Committee

Presented by: Chair Record

Chair Record announced the creation of a subcommittee of the Audit and Ethics Committee. The subcommittee will be led by three Board members and outside legal counsel. The Directors appointed to the subcommittee are: Chair Dear, Vice-Chair Ramos, and committee member Kurtz.

Director Dake mentioned that although there was an oral ethics presentation on April 25, 2017 he is interested in hearing the formal process of how employee ethics investigations are handled.

Ethics Officer Deena Ghaly responded that Ethics investigation guidelines are posted on Metropolitan's internal and external websites. She said the topic will also be covered at the committee's July meeting. Ms. Ghaly also mentioned that she would like to be a part of the subcommittee discussions.

Board member Abdo entered at 12:05 pm

- b. Subject: Bay-Delta Committee Meetings

Presented by: Chair Record

Chair Record mentioned that there will be a series of important Bay-Delta committee meetings in the coming months. He asked that Board members communicate with Metropolitan if they require any special accommodations, such as teleconferencing, to ensure their participation.

4. OTHER MATTERS

None

5. CONSENT CALENDAR ITEMS – ACTION

None

6. OTHER BOARD ITEMS – ACTION

None

7. BOARD INFORMATION ITEMS

None

8. DEPARTMENT HEAD REPORTS

- a. Subject: General Manager's report of Metropolitan's activities

Presented by: General Manager Jeff Kightlinger

General Manager Kightlinger introduced Charlie Eckstrom, the new Group Manager of Information Technology.

General Manager Kightlinger mentioned that the Biological Opinions for California WaterFix were released, June 26, 2017. He also mentioned the confirmation proceedings for Brenda Burman, former Metropolitan employee, as U.S. Bureau of Reclamation Commissioner.

Lastly, he commented that Metropolitan is aiming for a balanced approach and collaborative process for the California Water Fix.

- b. Subject: General Counsel's report of Legal Department activities

Presented by: General Counsel Marcia Scully

General Counsel Marcia Scully had no report.

- c. Subject: General Auditor's report of Audit Department activities

Presented by: General Auditor Gerry Riss

General Auditor Riss reported that on July 11, 2017 he will be providing a presentation on the Audit's Business Plan. Additionally, external auditor MGO will be giving a presentation on the audit evaluation process.

- d. Subject: Ethics Officer's report of Ethics Department activities

Presented by: Ethics Officer Deena Ghaly

Ethics Officer Ghaly had no report.

9. COMMITTEES REPORTS AND ITEMS

a. Subject: Finance and Insurance Committee

Presented by: Committee Chair Barbre

Committee Chair Barbre reported that in July the committee will consider the corrected resolution fixing and adopting a Readiness-to-Serve Charge for CY 2018. Additionally, there will be a report on Metropolitan's financial ratings.

b. Subject: Water Planning and Stewardship Committee

Presented by: Committee Chair Gray

Committee Chair Gray reported that in July a joint committee with the Special Committee on Bay Delta will be held. At this joint meeting, committee members will receive the first in a series of three written reports on California WaterFix. The first report will describe the facilities involved in California WaterFix. Additional reports will also be given in future joint committee meetings.

The July Water Planning and Stewardship committee agenda will include two action items: 1) consent calendar item to authorize a contract for services to help with research on the Longfin Smelt and 2) action item to consider providing a storage credit for in-lieu deliveries of treated water to agencies that have been impacted by the detection of unconfirmed Quagga Mussels in State Water Project Supplies.

Additionally, Chair Gray reported that the committee will also hear a series of information reports.

c. Subject: Engineering and Operations Committee

Presented by: Committee Vice Chair Blois

Committee Vice Chair Blois reported that in In July, staff will bring before the committee seven action items including:

1. A contract to construct an advanced water treatment demonstration plant
2. Agreements for Colorado River Aqueduct energy and transmission services
3. Authorization to remove Modules 4, 5, and 6 from service at the Skinner plant
4. An increase in change order authority for the construction contract to rehabilitate Palos Verdes Reservoir, and
5. An increase in change order authority for the construction contract to build houses at Iron Mountain Pumping Plant

An oral report on Metropolitan's Apprenticeship Program will also be presented.

d. Subject: Communications and Legislation Committee

Presented by: Committee Chair Kurtz

Committee Chair Kurtz reported that the Communications and Legislation Committee has no action items scheduled for consideration in July. Staff will provide an update on Metropolitan's 2017 Water Conservation Advertising and Outreach Campaign highlighting the new content for summer. In addition, the committee will hear reports from Sacramento and Washington as well as an update on other External Affairs activities.

e. Subject: Organization, Personnel and Technology Committee

Presented by: Committee Chair Wunderlich

Committee Chair Wunderlich reported that in July the committee will confer with labor negotiators in closed session.

The committee will also consider amendments to agency temporary skilled craft labor agreements with three contractors. Additionally, the committee will consider appropriating \$1.9 million for the design of an Enterprise Content Management (ECM) application; a contract for \$1.450 million to HBR Consulting, LLC for software and professional services for design of an ECM system.

Lastly, the committee will hear a presentation on department heads' evaluations. All Board members were sent an email from Human Resources to collect their input on department heads.

f. Subject: Legal and Claims Committee

Presented by: Committee Chair Quiñonez

Committee Chair Quiñonez reported that in July the committee will hear a report on existing litigation: Shimmick Construction Company v. Metropolitan. Additionally, the committee will hear about General Counsels Business Plan for 2017/18.

In closed session, the committee will hear a report on the *San Diego County Water Authority v. Metropolitan* litigation.

g. Subject: Real Property and Asset Management Committee

Presented by: Committee Vice-Chair Dake

Committee Vice-Chair Dake reported that the Real Property and Asset Management will not be holding a committee meeting in the month of July. It will resume in August.

- h. Subject: Approve draft committee and board meeting agendas and schedule for July 2017
- Presented by: Chair Record
- Motion: Approve draft committee and board meeting agendas and schedule for July 2017.
- Motion: Carried
- Moved: Director De Jesus Seconded: Director Kurtz
- Ayes: Directors Record, Ackerman, Barbre, Blois, De Jesus , Gray, Hogan, Kurtz, Quiñonez, and Wunderlich
- Noes: None
- Abstentions: None
- Absent: Directors Murray, Camacho, Dick, and Peterson

The motion passed by a vote of 10 ayes, 0 no, 0 abstain, and 4 absent.

- i. Subject: Discuss Establishing Committee for Naming of District Facilitates
- Presented by: Chair Record
- Chair Record asked for Board members to serve on a committee. Director Barbre volunteered to serve on the committee.
- j. Report on San Diego County Water Authority v. Metropolitan Water District of Southern California, et al., San Francisco County Superior Court Case Nos. CPF-10-510830, CPF-12-512466, CPF-14-514004 and CPF-16-515282; and the appeal of the 2010 and 2012 actions, Court of Appeal for the First Appellate District Case Nos. A146901 and A148266.
- [Conference with legal counsel – existing litigation; to be heard in closed session pursuant to Gov. Code Section 54956.9(d)(1)]**

This item was discussed in closed session. No action was taken.

10. FOLLOW-UP ITEMS

None

11. FUTURE AGENDA ITEMS

None

The meeting was adjourned at 12:43 p.m.

Randy Record
Chair of the Board



Removal of Modules 4, 5, and 6 from Service at the Skinner Plant

Engineering and Operations Committee
Item 8-5
July 10, 2017

Current Action

- Authorize the removal of Plant 2 (Modules 4, 5, and 6) and associated equipment from service at the Skinner plant

Skinner Water Treatment Plant



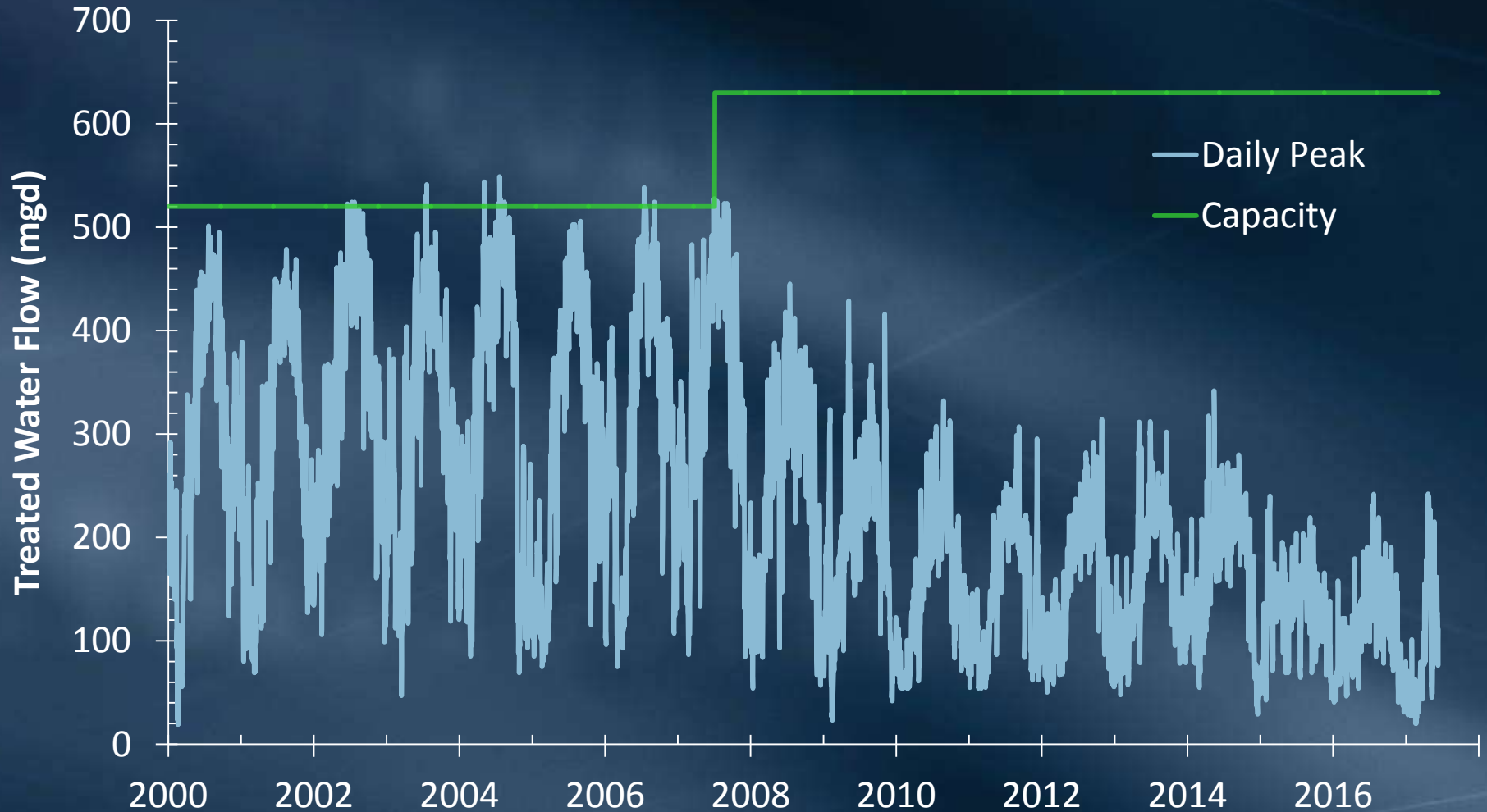
Background

- Skinner plant has experienced reduced flows and treatment capacity exists above peak demands
- Skinner peak flow forecasts were conducted and presented to the Board and member agencies
- Skinner area agencies also provided peak flow forecasts
- In April 2017, the Board adopted policy principles regarding opportunities to decommission unneeded treatment infrastructure

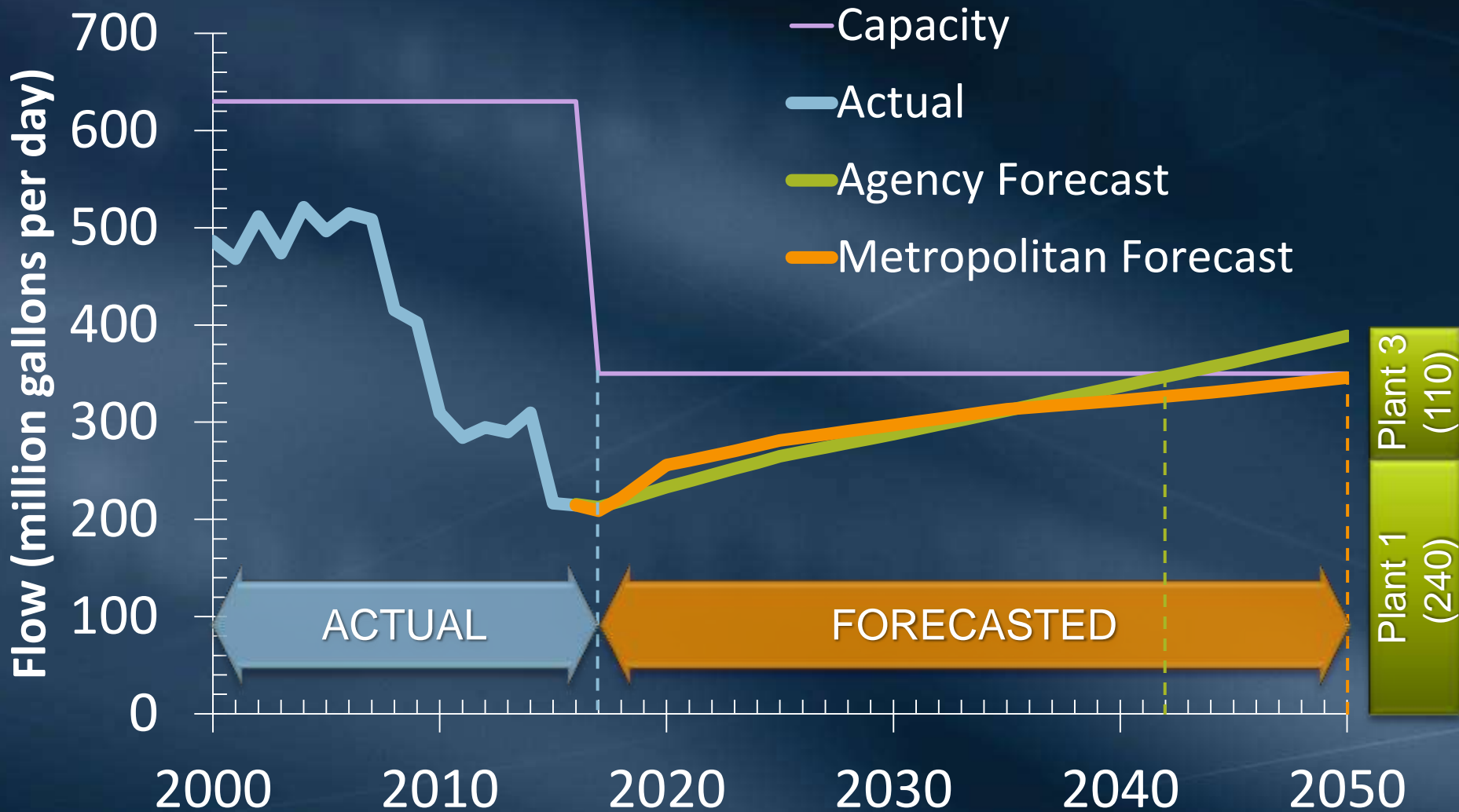
Skinner Flow Capacities

Plant	Module	Module Design Capacity (mgd)	Plant Design Capacity (mgd)
Plant 1	1	75	240
	2	75	
	3	90	
Plant 2	4	80	280
	5	100	
	6	100	
Plant 3	7	110	110

Historical Skinner Plant Flows (mgd)



Skinner Plant Flow Forecast (Based on Maximum Daily Plant Flows)

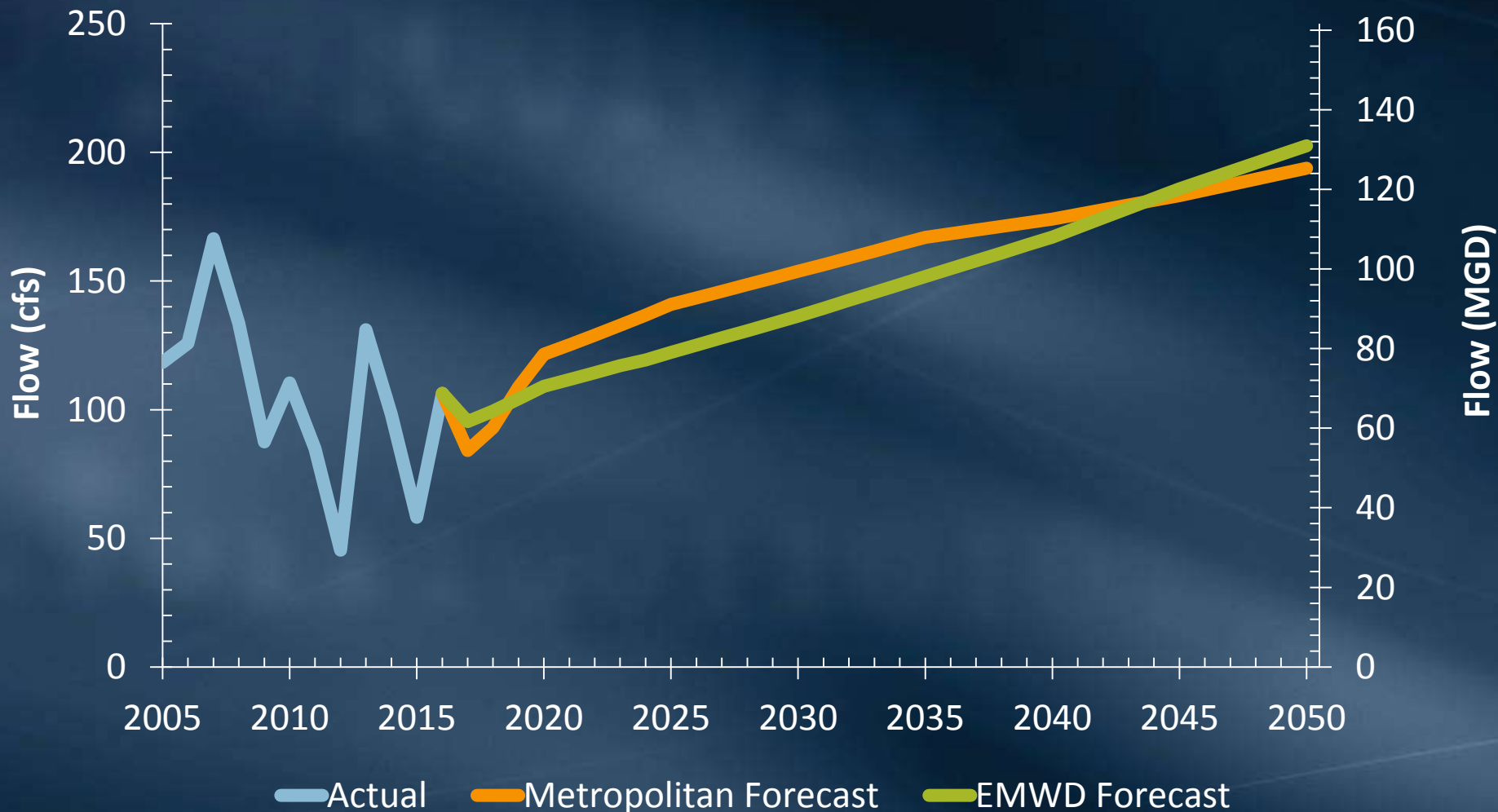


Skinner Plant Flow Forecast

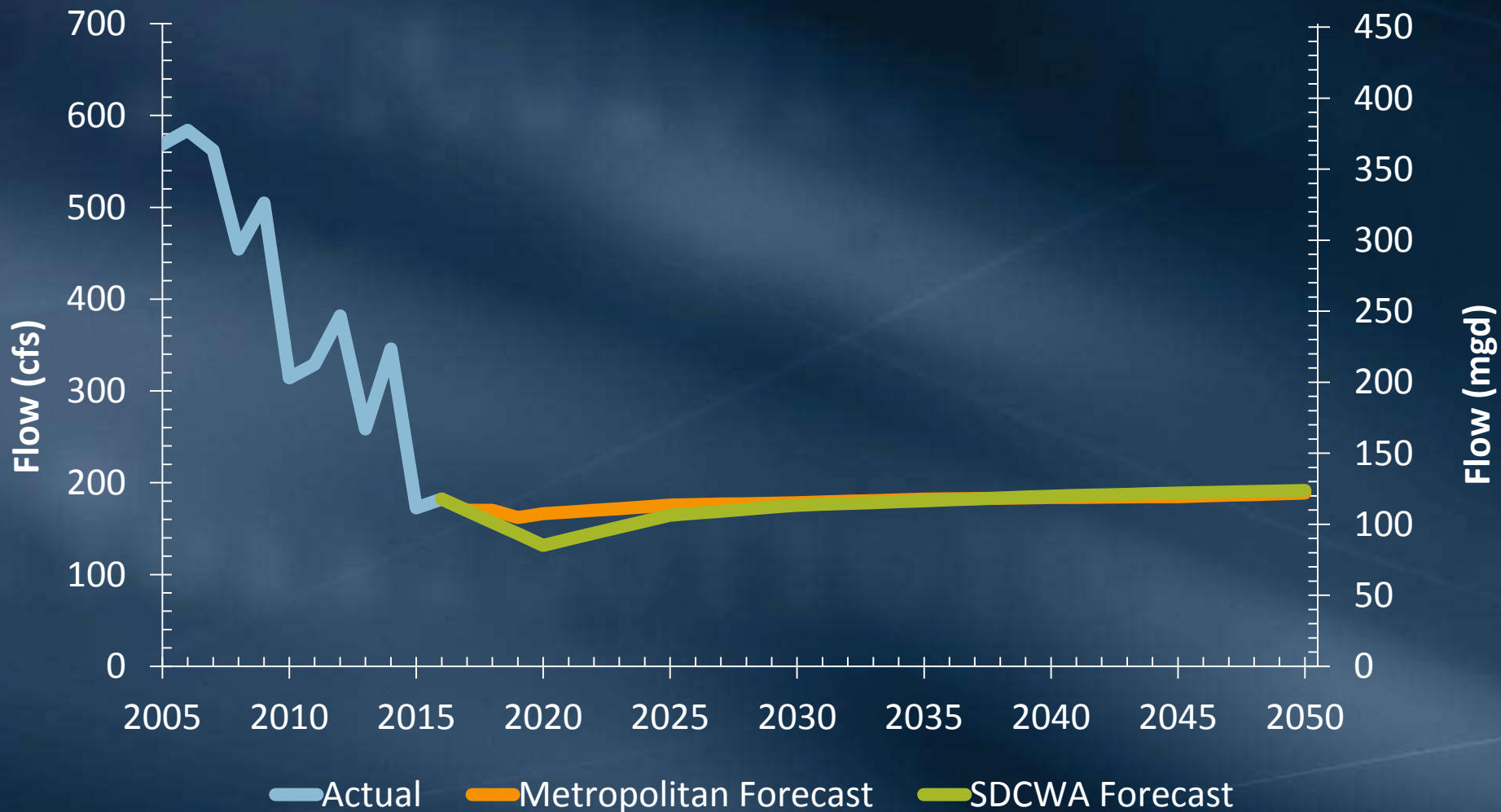
Assumptions

- Forecast based on 2015 Integrated Resource Plan
- Agencies meet 20 percent conservation goal by 2020
- Agencies continue to meet the same proportion of their treated demand from the Skinner plant
- All local production and treatment facilities are available
- Daily peaking patterns remain the same as recent years

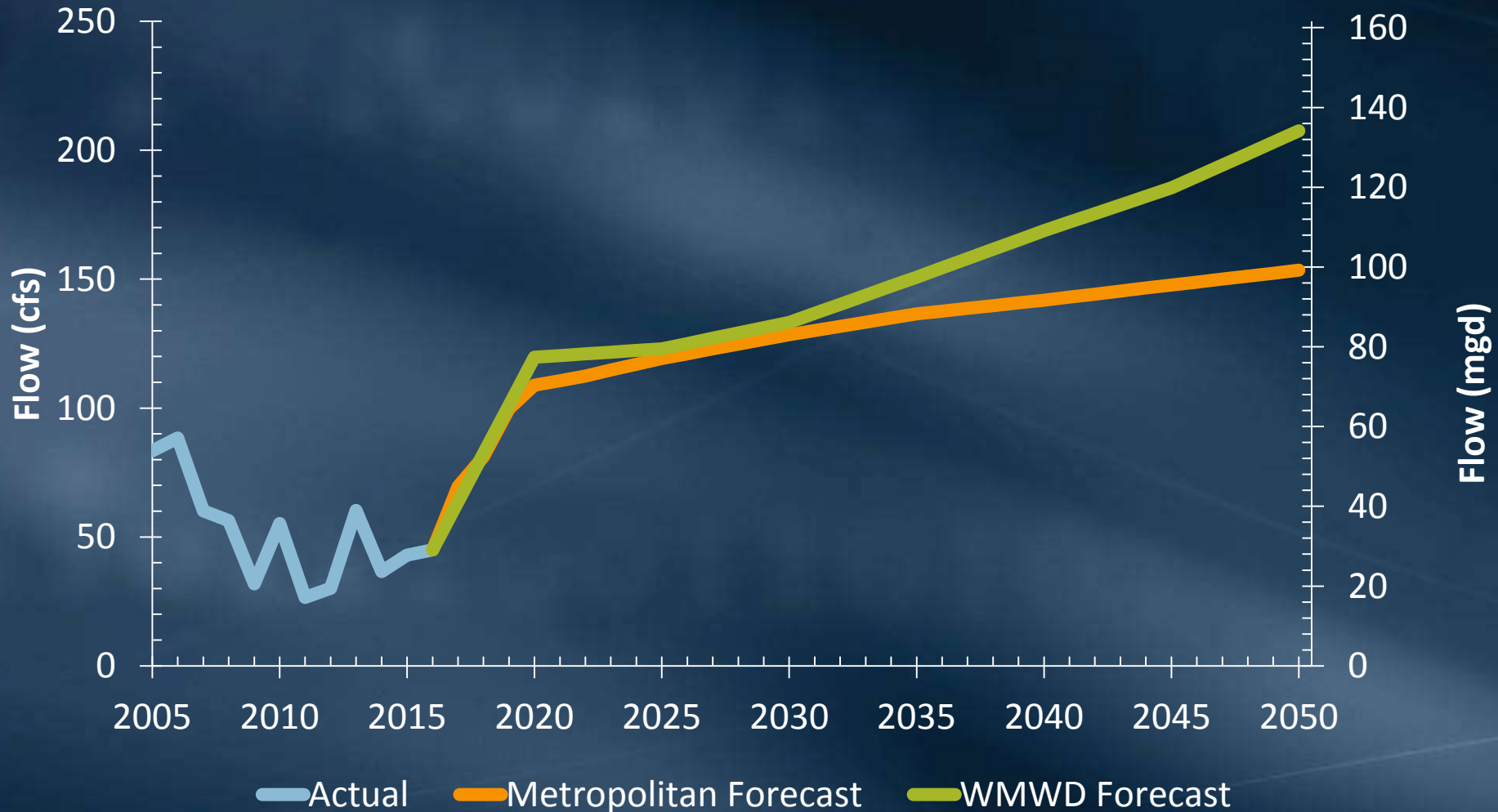
Maximum Daily EMWD Skinner Plant Flows through 2050



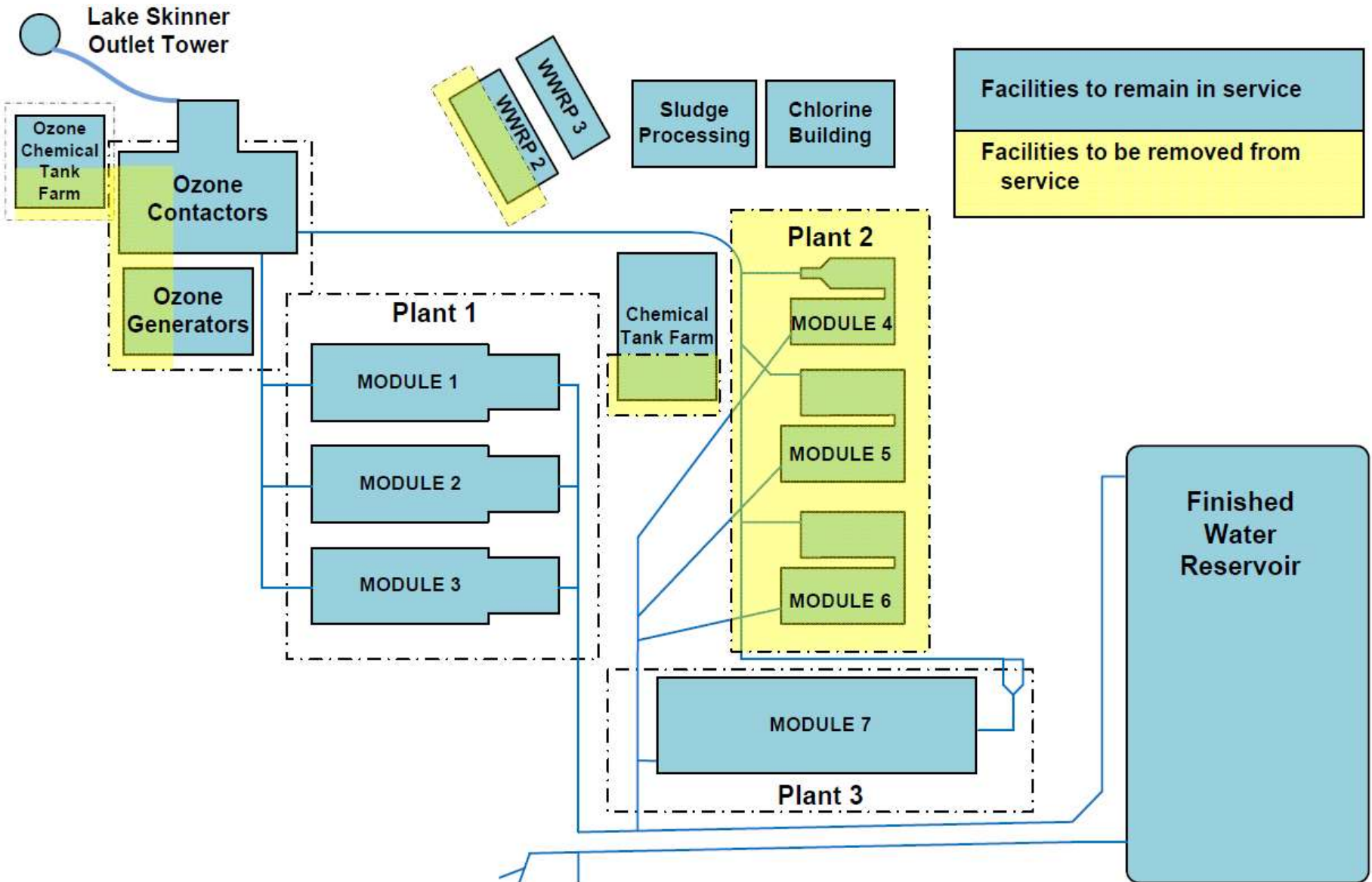
Maximum Daily SDCWA Skinner Plant Flows through 2050











Maximum Daily WMWD Skinner Plant Flows through 2050



Skinner Treatment Plant



O&M Impacts Associated with Removing Skinner Plant 2 from Service

Item	Cost Impact
Ozone (LOX and Electricity)	
Electricity	
Maintenance Labor	
Maintenance Materials & Supplies	
Operations Labor	
Chemicals	
Solids (Sludge) Disposal	
Overall Cost Impact (per year)	 \$1.1M

Capital Improvement Projects Avoided at Skinner Plant

Project Type	Cost (\$)
Instrumentation	1,541,000
Control System	2,092,000
Mechanical/Electrical	7,935,000
Filters	6,560,000
Piping	872,000
Total	19,000,000

Other Considerations for Removing Skinner Modules from Service

- Reduction of available treatment capacity
- Additional time to respond to large flow changes
- Revisions to operating permit required
- One-time cost of removing facilities from service
- Time and cost to return decommissioned facilities to service in the future

Next Steps

- Begin removing Modules 4, 5, and 6 from service this year
- Coordinate with member agencies and update Jensen plant demand projections
- Provide updates to the Board

Board Options

- Option #1

- Adopt the CEQA determination that the proposed action is categorically exempt and authorize the removal of Plant 2 (Modules 4, 5, and 6) and associated equipment from service at the Skinner plant.

- Option #2

- Do not proceed with the project at this time.

Staff Recommendation

- Option #1





- **Board of Directors**
Engineering and Operations Committee

7/11/2017 Board Meeting

8-5

Subject

Adopt CEQA determination and authorize the removal of Modules 4, 5, and 6 from service at the Robert A. Skinner Water Treatment Plant

Executive Summary

This action reduces the Robert A. Skinner Water Treatment Plant (Skinner plant) flow capacity from 630 to 350 million gallons per day (mgd) by authorizing the removal of Modules 4, 5, and 6 (Plant 2) and associated infrastructure from service. In coordination with impacted member agencies, a staff analysis demonstrated treatment capacity exists above expected peak demands at the Skinner plant for potentially up to 25 years. Removal of Plant 2 will reduce costs while ensuring the region preserves adequate and reliable treatment capacity to meet expected demands.

Details

Background

The Skinner plant, located north of Temecula in Riverside County ([Attachment 1](#)), began delivering treated water in 1976. Increasing demand for treated water in the Skinner plant service area led to four plant expansions and the present capacity of 630 mgd. [Attachment 2](#) shows a schematic of the Skinner plant treatment facility. Although some systems such as ozone disinfection, chemical storage, and the finished water reservoir are used in common, the Skinner plant actually consists of three individually permitted plants. Plant 1 (Modules 1, 2, and 3) and Plant 3 (Module 7) consist of conventional treatment (coagulation, flocculation, sedimentation, and filtration) whereas Plant 2 (Modules 4, 5, and 6) consists of direct filtration (all processes except sedimentation).

Throughout the 1990s and early 2000s, peak demand on the Skinner plant increased from approximately 400 mgd to over 520 mgd (the design capacity at the time). Significant development in the Inland Empire and San Diego region led to a rapid increase in demand on the Skinner plant. Consultation with Metropolitan's member agencies relying on the plant projected continued regional growth into the future. After staff first coordinated the daily plant operations and the planning for facility expansions with the Skinner area member agencies, the Board authorized preliminary design for the fourth Skinner plant expansion in 2002. Skinner plant treatment capacity was increased from 520 mgd to 630 mgd with the completion of Plant 3 in July 2007. This capacity increase was beneficial for meeting peak demands for the remainder of 2007.

More recently, the Skinner plant has experienced significantly reduced demands ([Attachment 3](#)). Factors contributing to this reduction include increased conservation, the severe economic downturn of the late 2000's, new local supplies, and new supplemental treatment capacity installed by member agencies. As a result, sufficient capacity exists at the Skinner plant to consider removing portions of the plant from service.

As a related issue, the Board directed staff to review the treatment surcharge portion of Metropolitan's water rates in April 2016. In April 2017, the Board adopted a resolution approving a Treatment Charge Workgroup's proposed policy principles. One of the policy principles states, in part, "In an effort to contain overall treatment costs on an on-going basis, MWD shall programmatically identify opportunities to partially or fully

decommission unneeded treatment infrastructure and minimize future O&M and capital expenditures.” This current examination of the Skinner plant capacity is consistent with this policy principle.

Skinner Plant Flow Forecast

Metropolitan staff conducted a study, based on the 2015 Integrated Resources Plan (IRP), to forecast peak flow demands through the year 2050. This study found that the daily peak flow on the Skinner plant should not exceed 350 mgd for up to the next 30 years. The forecast included the following important assumptions:

- The Skinner area agencies meet the 20 percent conservation goal by 2020 as required by SB X7-7 (2009);
- Water demands for San Diego County Water Authority and Western Municipal Water District grow at the rate identified in Metropolitan’s 2015 IRP;
- Water demands for Eastern Municipal Water District (Eastern) grow at a rate 11 percent lower than identified in Metropolitan’s 2015 IRP (this adjusted demand growth aligns with Eastern’s long-term average);
- The member agencies continue to meet the same proportion of their treated demand from the Skinner plant;
- All local production and treatment facilities are available; and
- Daily peaking patterns remain the same as recent years.

Staff also met with member agency representatives to separately gather their estimates of their peak-day demands on the Skinner plant. The member agency data were then aggregated to show a second estimate of future Skinner plant demands. This analysis found that the daily peak flow should not exceed 350 mgd for approximately the next 25 years.

Attachment 4 summarizes the results of both studies and shows actual and forecast maximum daily Skinner plant flows. This figure shows the two separate flow estimates are in reasonable agreement given the range of uncertainty in long-term demand forecasting. Thus, the peak flow demand in the Skinner plant service area could be met without any of the treatment processes supporting the 280 mgd Plant 2 for up to the next 25 years. Because of the extended length of time that Plant 2 could remain out of service, and consistent with the Board policy principle to minimize future operations and maintenance (O&M) and capital expenditures, staff is recommending removing Plant 2 from service.

Specific equipment, which would be removed from service includes:

- All mechanical and electrical equipment, instrumentation, and filtration media within Plant 2;
- A portion of the ozone system, including two ozone generators, two ozone contactors, and all of the equipment and instrumentation which support these systems;
- A portion of the chemical feed systems, including the entire caustic soda tank farm at the ozone contactors; and one storage tank from each of the other chemical systems which store coagulants, pH adjustment chemicals, and ammonia; and
- A portion of the washwater reclamation plant including mechanical and electrical equipment and basins.

The equipment removed from service will be held as spares, repurposed, or salvaged.

O&M Impacts Associated with Removing Plant 2 from Service

The O&M cost savings associated with removing Plant 2 from service are estimated at \$1.1 million per year. The main factors lowering the O&M costs include: (1) reduced electrical load from mixers and support equipment; (2) reduced materials and supplies; and (3) reduced labor to maintain and operate the facility. Labor cost savings will be achieved through managed hiring.

Avoided Capital Investment Costs

In addition to annual O&M savings, removing Plant 2 from service eliminates the need to repair and refurbish the facility. Often, these repairs require capital investments. Staff projects that approximately \$19 million in capital expenditures can be avoided by removing Plant 2 entirely from service. These avoided projects include replacing instrumentation, upgrading the control system equipment, refurbishing or replacing valves and piping, and replacing filter media.

Other Considerations

Staff carefully considered other potential effects of removing Plant 2 from service. First, by decommissioning Plant 2, the Skinner plant service area loses 280 mgd of available treatment capacity in the unlikely event of long-term disruptions to other regional potable water treatment. Second, the Skinner plant may need additional time to respond to large flow change requests. Third, Metropolitan will need to revise its operating permit with the State Water Resources Control Board, and there is a one-time cost of about \$300,000 to remove facilities safely from service. If the decommissioned facilities need to return to service in the future, there will be costs and significant lead time involved with rehabilitating and re-permitting the facility. Even with these considerations, and based on the Skinner plant flow forecast, sufficient treatment resources remain available under foreseeable circumstances. Thus, staff recommends decommissioning Plant 2.

Financial Analysis

Removing Plant 2 from service reduces O&M costs by approximately \$1.1 million per year and avoids capital expenditures of approximately \$19 million over the next 25 years. These cost savings will be partially off-set by the one-time cost to decommission Plant 2 of approximately \$300,000, as discussed above. In addition, the Controller will write down the book value of Plant 2 in fiscal year 2016/17, which was approximately \$92 million as of June 30, 2016. Generally accepted accounting principles require that assets that are not in service be written off, hence the net book value of these assets will be reduced to zero.

Policy

By Minute Item 50790, the Board, at its April 11, 2017 meeting, adopted Resolution 9221 approving Treatment Charge Workgroup's proposed policy principles, as amended.

Metropolitan Water District Administrative Code Section 4504: Rates of Flow.

California Environmental Quality Act (CEQA)

CEQA determination(s) for Option #1:

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. In particular, the proposed action consists of the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination. Accordingly, this proposed action qualifies as a Class 1 Categorical Exemption (Section 15301 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under a Categorical Exemption (Class 1, Section 15301 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determination that the proposed action is categorically exempt and

Authorize the removal of Plant 2 (Modules 4, 5, and 6) and associated equipment from service at the Skinner plant.

Fiscal Impact: A one-time O&M cost of about \$300,000 to remove facilities from service, offset by reduced O&M costs of approximately \$1.1 million per year and future avoided capital costs of approximately \$19 million to refurbish and replace portions of Plant 2 at the Skinner plant.

Business Analysis: This option will provide operational savings and forgo capital investments on idle capacity identified at the Skinner plant.

Option #2

Do not proceed with the project at this time.

Fiscal Impact: None

Business Analysis: Under this option, staff would continue to operate and maintain Skinner Plant 2, together with associated operational equipment.

Staff Recommendation

Option #1



James F. Green
Manager, Water System Operations

6/21/2017
Date



Jeffrey Knightlinger
General Manager

6/28/2017
Date

Attachment 1 – Location Map

Attachment 2 – Skinner Treatment Plant Process

Attachment 3 –Historical Skinner Plant Flows

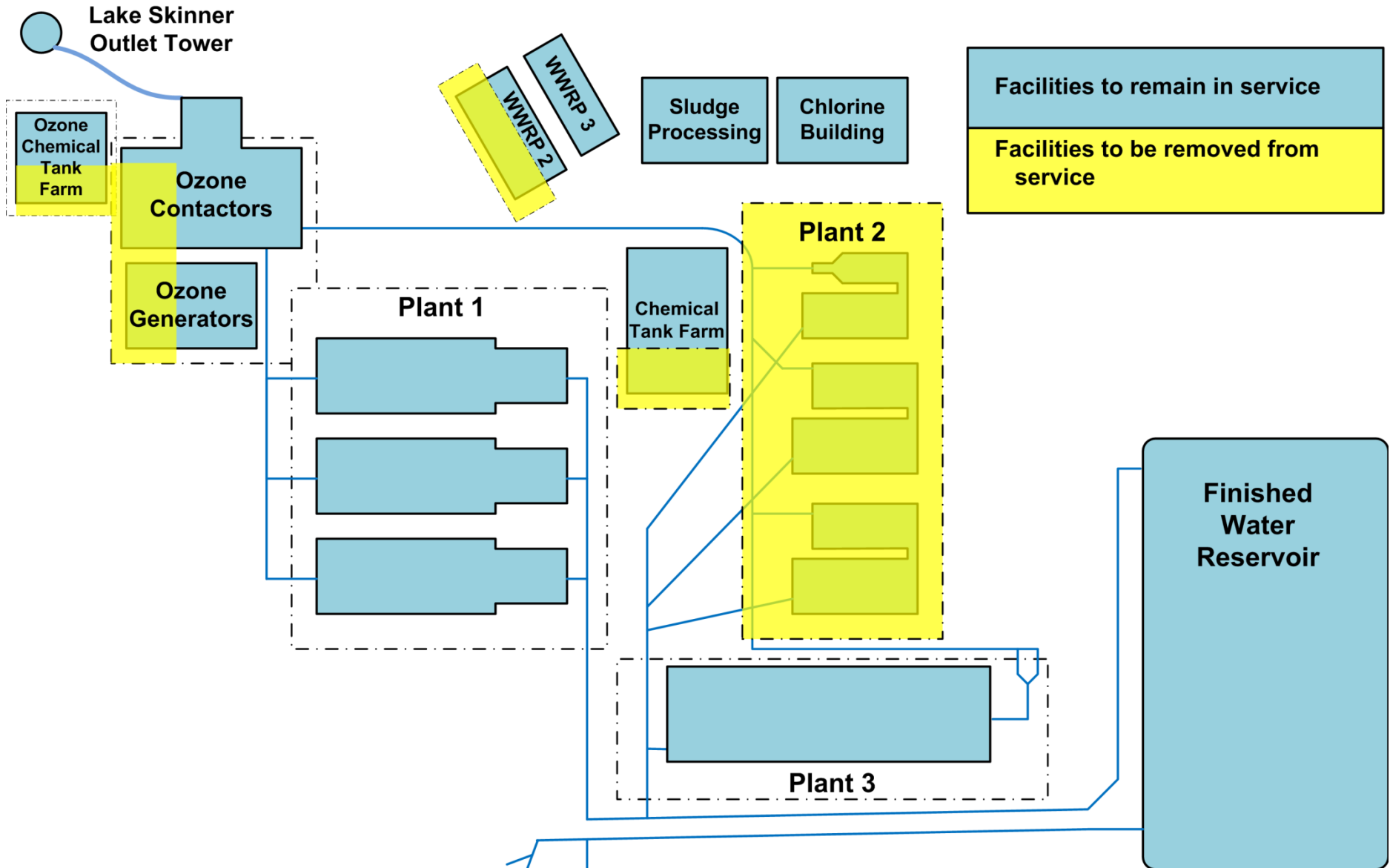
Attachment 4 – Skinner Plant Flow Forecast

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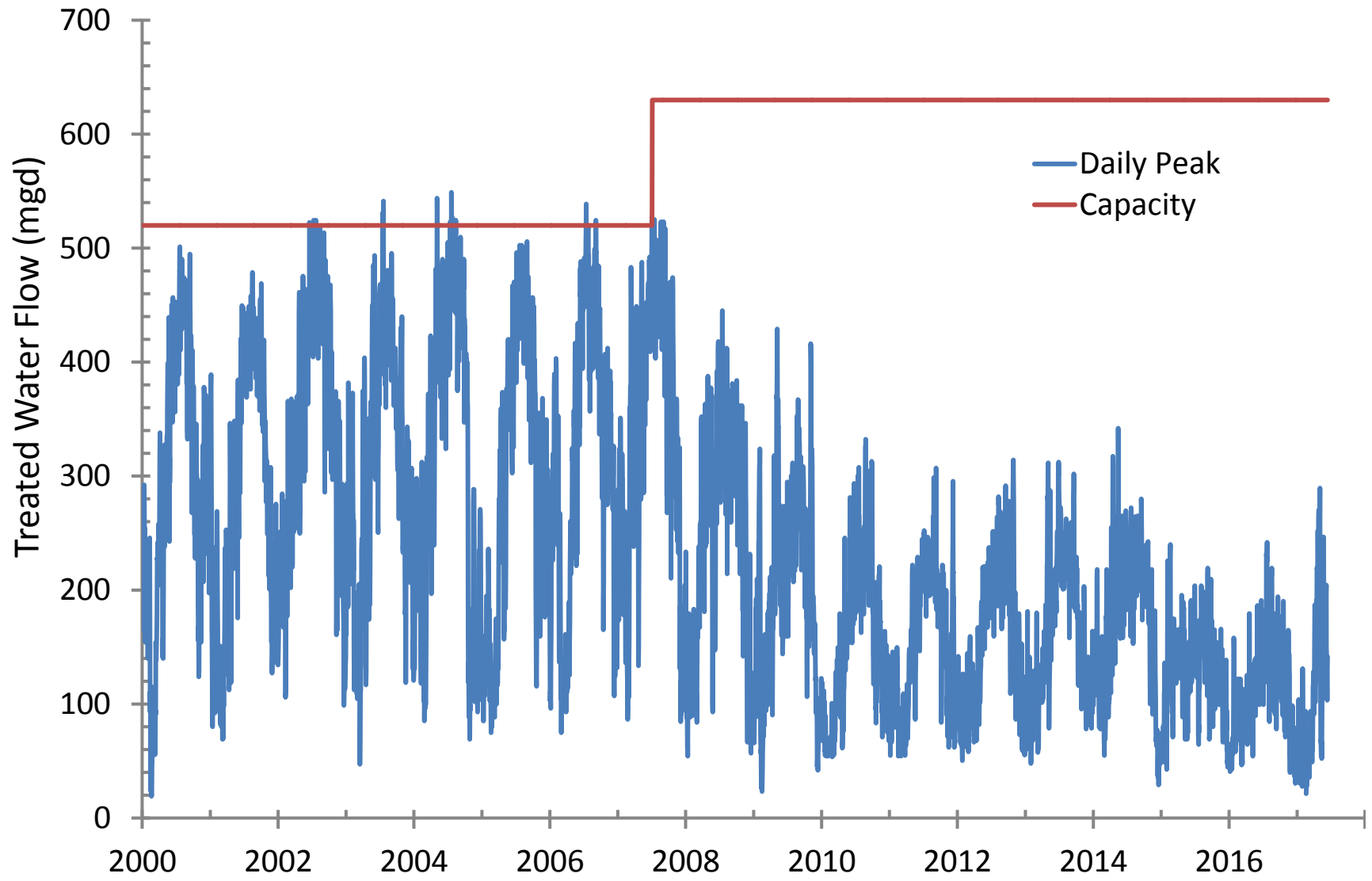
Location Map



Skinner Treatment Plant Process



Historical Skinner Plant Flows (mgd)



Skinner Plant Flow Forecast (Based on Maximum Daily Plant Flows)

