

515 WATER SHORTAGE PLAN

515.1 INTRODUCTION

This plan will apply to all direct retail customers of Des Moines Water Works. Municipal water systems and rural water systems that purchase water for resale are not subject to this plan, however, it is anticipated that all such municipal and rural systems will implement parallel water shortage plans which will result in reductions in demand similar to those described in this plan.

The intent of Des Moines Water Works' Water Shortage Plan is to manage system demand so customers do not experience pressure, quality, or availability issues during periods of extreme water demand or during other times when water availability may be limited due to other events, such as raw water shortage, water quality events, or mechanical failures.

The goal at each stage in the plan is to reduce system demands to 85% or less of the "Current Capacity" to produce safe drinking water, as defined in this plan.

Nominal capacity of the Des Moines Water Works system is 100 MGD. Winter demand in a typical year averages approximately 40 MGD as shown in Figure A. Seasonal outdoor water use including moderate lawn watering, increases demand to an average of approximately 60 MGD during the summer months as shown in Figure A. The majority of demand above 60 MGD is attributed to be lawn watering. Heavy lawn watering causes spikes in demand which can reach more than 95 MGD.

Based on historic consumption patterns, lawn watering accounts for as much as 40 MGD of demand during heavy lawn watering periods. Thus, a 25% reduction in lawn watering should result in a 10 MGD reduction in total demand to approximately 85 MGD, a reduction of more than 10% compared to peak demand otherwise expected. This is the premise of Stage I. Stage I may be skipped if a water shortage occurs during a time of year when lawn watering demand is not significant.

Based on historic consumption patterns, total outdoor water use accounts for as much as 50 MGD of demand during heavy lawn watering events. Thus, a 50% reduction in outdoor water use should result in a 25 MGD reduction in total demand to 70 MGD, a reduction of more than 25% compared to peak demand otherwise expected. This is the premise of Stage II. Stage II may be skipped if a water shortage occurs during a time of year when lawn watering demand is not significant.

Based on the foregoing analysis, that lawn watering accounts for as much as 40 MGD of the demand during heavy lawn watering periods and understanding that the vast majority of this is lawn watering, prohibiting lawn watering should result in a 40 MGD reduction in total demand to approximately 55 MGD, a reduction of more than 40% compared to peak demand otherwise expected. This is the premise of Stage III. Stage III may be skipped if a water shortage occurs during a time of year when lawn watering demand is not significant.

Limiting consumption to a representative average of off peak months, plus or minus a small allowance, will result in a demand of approximately 40 MGD, a reduction of nearly 60% compared to peak consumption. This is the premise of Stage IV.

The stages of this plan are not necessarily consecutive. When a water shortage occurs the stage deemed most appropriate for the conditions will be implemented.

515.2 CURRENT CAPACITY TO PRODUCE SAFE DRINKING WATER AND EXPECTED PEAK DEMAND

515.2.1 CURRENT CAPACITY

The current capacity to produce safe drinking water on any day is referred to “Current Capacity” or C_{Total} . Current Capacity is defined as the amount of water Des Moines Water Works can produce and deliver on any day taking into consideration raw water availability and quality, seasonal treatment efficacy, and any mechanical or operational issues on that given day. The number will vary seasonally and may vary day to day depending on specific water quality and operational conditions. Current Capacity is computed as the sum of the daily capacities of the individual Des Moines Water Works treatment plants and may be expressed in the following formula:

$$C_{Total} = C_{Fleur} + C_{McMullen} + C_{Saylorville}$$

Current Capacity will be evaluated on a daily basis when there is potential for a water shortage. Des Moines Water Works Water Production staff will perform the daily evaluation and report the Current Capacity in Million Gallons per Day.

515.2.2 EXPECTED PEAK DEMAND

“Expected Peak Demand” is defined as the peak daily demand that is expected by the Des Moines Water Works without implementation of water shortage measures under this plan.

515.3 STAGE I: VOLUNTARY 25% REDUCTION IN LAWN WATERING

515.3.1 TRIGGER

During a period of substantial lawn watering demand, when Expected Peak Demand reaches 90% of Current Capacity or system demand is generating a high number of areas with low pressure, or there are other indications that without wise usage of water, a shortage could occur.

515.3.2 ANTICIPATED IMPACT

It is anticipated that Stage I will most likely be triggered during peak lawn watering season. In a typical year lawn watering can account for as much as 40 MGD of demand on a peak day. If this is the case, a 25% reduction in lawn watering will result in a 10 MGD reduction in total demand. At peak demand 10 MGD would be more than a 10% reduction.

515.3.3 GOAL

A 10% reduction in system demands as compared to Expected Peak Demand.

515.3.4 ACTION

515.3.4.1 Request a **metro wide** 25% reduction in lawn watering.

515.3.4.2 Encourage residential and business customers to optimize their lawn watering systems so water is not directed onto impervious surfaces and turf is not overwatered.

- 515.3.4.3 Continued reinforcement that residential and business customers water on alternate days and excluding Mondays (historically a peak demand day), by a system under which even numbered addresses water only on Wednesday, Friday and Sunday, and odd-numbered addresses water only Tuesday, Thursday, and Saturday.
- 515.3.4.4 Suspend Des Moines Water Works' hydrant flushing program except for water quality purposes.
- 515.3.4.5 Request that City officials minimize high water use activities such as street sweeping and watering golf course fairways.
- 515.3.4.6 Coordinate with wholesale customers to ensure they are relaying the same message.

515.3.5 ENFORCEMENT

There will be no enforcement at this stage.

515.4 STAGE II: VOLUNTARY 50% REDUCTION IN LAWN WATERING

515.4.1 TRIGGER

During a period of substantial lawn watering demand, after Stage I has been implemented and failed to achieve an adequate reduction in consumption, when Expected Peak Demand exceeds 90% of Current Capacity, or system demand continues to generate areas of low pressure, or there are other indications that without further reductions in demand, a shortage could occur.

515.4.2 ANTICIPATED IMPACT

It is anticipated that Stage II will most likely be triggered during the peak outdoor water use season. In a typical year lawn watering use can account for as much as 50 MGD of demand on a peak day. If this is the case, a 50% reduction in outdoor water use will result in a 25 MGD reduction in total demand. At peak demand 25 MGD would be more than a 25% reduction.

515.4.3 GOAL

A 25% reduction in system demands as compared to Expected Peak Demand.

515.4.4 ACTION

515.4.4.1 Request customers further reduce water consumption by taking the following measures in addition to those implemented in Stage I:

515.4.4.1.1 Request a metro wide 50% reduction in outdoor water use.

515.4.4.1.2 Remind residential and business customers to optimize their lawn watering systems so water is not directed onto impervious surfaces and turf is not overwatered.

515.4.4.1.3 Reinforce the recommendation for customers to lawn water on alternate days and excluding Mondays.

515.4.4.1.4 Encourage wise use of water during outdoor activities including washing cars, playing in the sprinkler, playing with water toys, and filling swimming pools.

515.4.4.1.5 Encourage wise use of water indoors including identifying and repairing leaking fixtures, washing only full loads in dishwashers and washing machines, shorter showers, etc.

515.4.4.2 Coordinate with wholesale customers to ensure they are relaying the same message.

515.4.4.3 Request that public agencies (City, County, or State) set an example by:

515.4.4.3.1 Closing recreational facilities with known water inefficiencies.

515.4.4.3.2 Suspend the operation of decorative fountains.

515.4.5 ENFORCEMENT

There will be no enforcement at this stage.

515.5 STAGE III: LAWN WATERING PROHIBITED AND NO USE OF AUTOMATIC LAWN WATERING SYSTEMS

515.5.1 TRIGGER

During a period of substantial lawn watering demand, after Stage I and Stage II have been implemented and failed to achieve an adequate reduction in consumption, when Expected Peak Demand exceeds 90% of Current Capacity, or system demand continues to generate areas of low pressure, or there are other indications that without further reductions in demand, a shortage could occur.

515.5.2 ANTICIPATED IMPACT

It is anticipated that Stage III will most likely be triggered during peak lawn watering season. In a typical year lawn watering can account for as much as 40 MGD of demand on a peak day. If this is the case, prohibiting lawn watering will result in a 40 MGD reduction in total demand. At peak demand 40 MGD would be almost a 40% reduction.

515.5.3 GOAL

A 40% reduction in system demands as compared to Expected Peak Demand.

515.5.4 ACTION

Require residential and business customers to further reduce water consumption by suspending **all** lawn watering and the use of **all** automatic lawn watering systems. This reduction is in addition to all steps implemented in Stage I and Stage II.

515.5.5 ENFORCEMENT

Customers observed by DMWW irrigating in violation of this policy will be notified by a tag left at the property. If lawn watering is not suspended within 48 hours, water service will be terminated and the published termination fee will apply. Water service will be restored only upon receipt, by the Des Moines Water Works, of an undertaking by the customer that the customer understands and will comply with the mandatory conservation measures. Any subsequent violation will result in further termination of service. In addition, the use of water for lawn watering in violation of this plan shall be deemed an unauthorized use of water and Section 511.12 “Charges for the Unauthorized Use of Water/Metering Tampering”, of these Rules and Regulations shall apply and must be paid before water service will be restored.

515.6 STAGE IV: WATER RATIONING

515.6.1 TRIGGER

During periods of substantial lawn watering demand or other potential shortage, after Stage I, Stage II, and Stage III have been implemented and failed to achieve an adequate reduction in consumption, when Expected Peak Demand exceeds 90% of Current Capacity, or system demand is generating a high number of areas with low pressure, limited source water supply, or there are other indications that without wise usage of water, a shortage could occur.

Stage IV may also be invoked, without resort to Stages I through III, if Expected Peak Demand exceeds 90% of Current Capacity for any reason that cannot be addressed by the measures contemplated by Stages I through III.

515.6.2 ANTICIPATED IMPACT

It is anticipated that Stage IV will only be triggered in the event of a significant and severe water shortage, or other event, which severely reduces capacity relative to demand. In this case a reduction in demand to the lowest level which will meet public health and safety standards will be sought.

515.6.3 GOAL

A reduction in system demands as compared to Expected Peak Demand sufficient to allow the Des Moines Water Works to meet public health and safety standards

515.6.4 ACTION

Water rationing measures will be implemented and enforced by application of an Emergency Water Shortage Rate. In order to implement such rate the Des Moines Water Works shall set a target level for demand consistent with its Current Capacity and shall use such target to establish a “Rationing Factor” as defined in this Plan. All customers will be asked to reduce their consumption to a level at or below a “Stage IV Monthly Water Ration”, and consumption above such level will be charged at the Emergency Water Shortage Rate intended to strongly discourage consumption above such level.

515.6.5 ENFORCEMENT (Revised January 2024)

“Stage IV Monthly Water Ration” means for each customer the Typical Off-Peak Consumption of such customer multiplied by an announced Rationing Factor. “Typical Off-Peak Consumption” shall be computed as of the date that Stage IV is invoked as the mean monthly consumption of the customer for the immediately preceding months of March, April, and May. In lieu of a mean monthly consumption, a minimum domestic quantity may be applied for billing to meet basic human water consumption needs. The Rationing Factor shall be a percentage, which may be above or below 100%, as announced by the Des Moines Water Works and designed to effectively reduce consumption to the level as required by the prevailing circumstances.

While Stage IV is in effect each customer will be billed for all water at published rates. Additionally, all water used beyond the Stage IV Monthly Water Ration for each customer will be billed at the “Emergency Water Shortage Rate”. The Emergency Water Shortage Rate shall be four times the rate otherwise applicable to such customer. In the event stepped rates apply, the Emergency Water Shortage Rate shall be four times the Step 1 rate. Customers may appeal the Typical Off-Peak Consumption level determined for the customer as the basis for the customer’s bill as inaccurate or inequitable under the circumstances applicable to the customer. Appeals must be submitted in writing and will be considered on a case-by-case basis as provided under these Rules and Regulations.