Town of Minden

Water Conservation Plan

[[INSERT DATE OF ADOPTION]]

Prepared for:

Town of Minden
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Introduction

In 1991, Nevada enacted a law requiring adoption of conservations plans by water suppliers. Minimum standards for plumbing fixtures were adopted in 1991 (Assembly Bill 359) by Nevada and in 1992 minimum flow standards for plumbing fixtures were adopted by the federal government (National Energy and Policy Conservation Act).

The original Water Conservation Plan for the Town of Minden was developed in 1993 and modified in 1997 and 2007. The purpose of this water conservation plan is to document current conservation efforts and to continue to encourage the efficient use of water within the Town of Minden service area.

This water conservation plan was prepared for the Town of Minden in accordance with Nevada Revised Statue (NRS) 540. It was submitted to the Nevada Department of Conservation and Natural Resources (DCNR), Division of Water Resources (DWR) for review and approval prior to its adoption by the Town of Minden, as required by NRS 540.131.

This plan is available for public inspection during normal business hours at 1604 Esmeralda Avenue Suite 101, Minden NV 89423 as well as on the Town of Minden website at www.townofminden.com.

In accordance with NRS 540.131, this plan will be reviewed from time-to-time to reflect changes and will be updated every five (5) years. The next update of this plan is to be on, or before **[[INSERT DATE FIVE YEARS AFTER DATE OF ADOPTION]].**

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Water System Profile

The Town of Minden water system provides potable water to retail and wholesale customers within an overall service area that extends from the Minden Town boundaries north to Carson City.

1.1 SERVICE AREA CHARACTERISTICS

The Town of Minden retail system serves water to an approximate population of 3,003 people on 1,621 connections of which 1,368 are residential, and 243 are commercial connections. The service area boundaries for the retail system cover approximately three square miles.

In addition to the system's direct retail customers, the Town of Minden is also a wholesale water supplier to Douglas County Utilities (DCU) which in turn delivers that same water to Indian Hills General Improvement District (IHGID) and Carson City Public Works for disbursement through each respective system.

Presently, no water treatment of any type is required due to the good quality of the Town's water supply. The Town does however chlorinate the water it delivers to Douglas County at the request of the wholesale customers.

Wastewater is collected from the service area by Minden Gardnerville Sanitation District. Treatment is performed at a regional plant and the effluent is reused for agricultural purposes. There is no reclaimed water system within the Town of Minden service area.

1.2 ANNUAL WATER SUPPLY AND STORAGE

The source of supply for the Minden system is groundwater which is located within the Middle Carson ID #16050202 of Carson Valley #105 in the Carson River Basin #8 of the Central Lahontan Hydrographic Region. There are a total of nine (9) wells using vertical line shaft turbine pumps equipped with variable speed drive motors. The pumping rate can be increased to meet system demands while supplying water for distribution and a total of one (1) storage tank. In addition to the existing nine (9) wells the Town of Minden is in the process of developing one (1) additional well for future use. The current system wells and storage tanks are identified in the tables below (Table A and Table B).

TABLE A – Storage Tank

Tank Name	Volume (gallons)
Amber Way Tank	2.5 Million

TABLE B –Production by Source

Well No.	Depth (feet)	Production (gpm)
1	392	1200
2	334	2400
3	310	2000
4	360	1800
5	510	145
6	200	Dedicated Well
7	427	1150
8	375	1100
9	375	1750

1.3 WATER USE PROFILE

The Town of Minden operates both a retail and wholesale system. Customers of the retail system can be divided into two customer classes: residential and commercial. Figure 1.3.1 is a breakdown by percentage of use by customer class in 2015.

FIGURE 1.3.1 Customer Use by Class

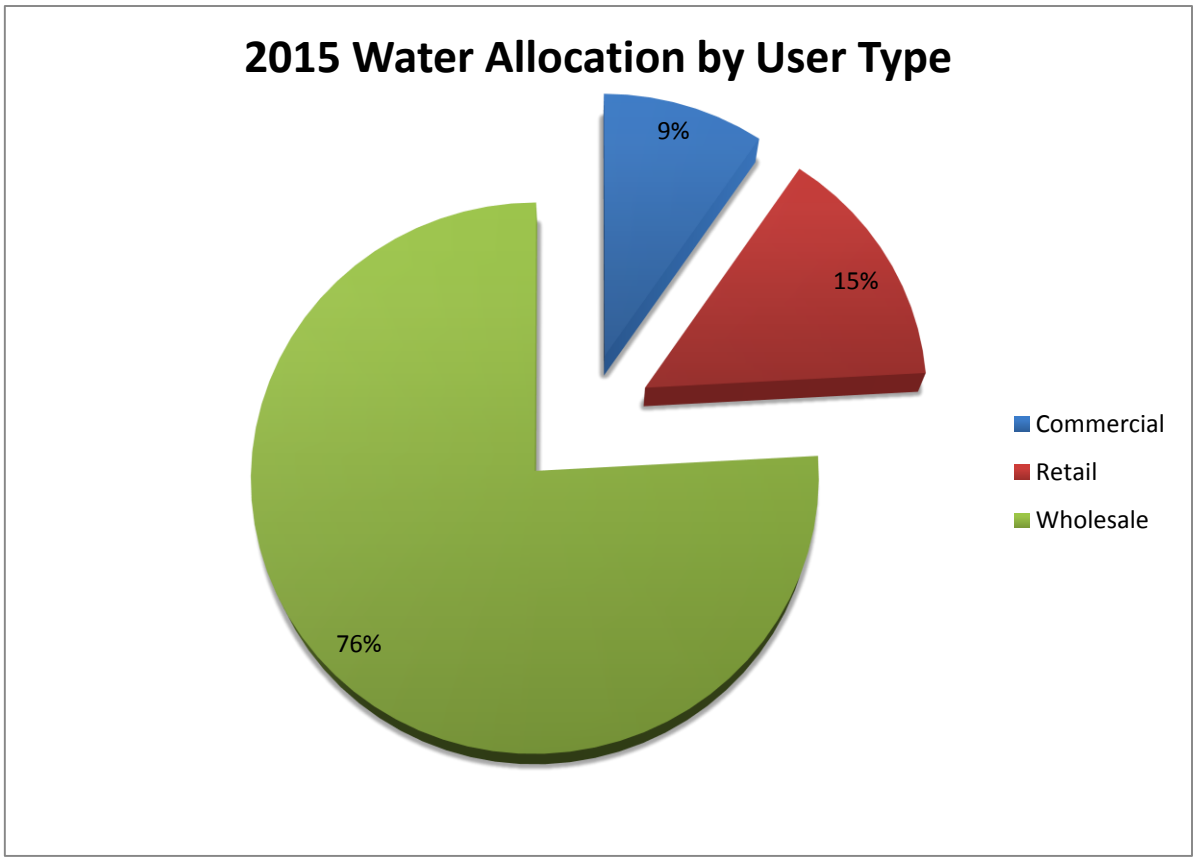
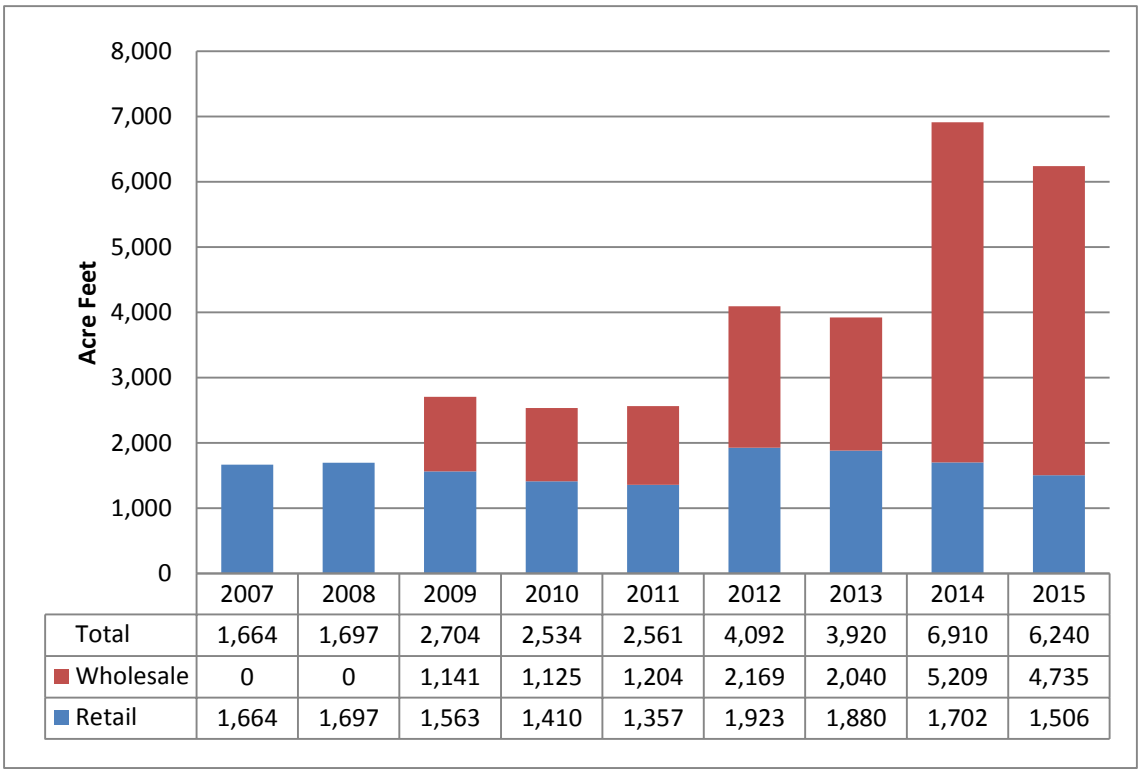


FIGURE 1.3.2 Wholesale vs. Retail Use



	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total	1,664	1,697	2,704	2,534	2,561	4,092	3,920	6,910	6,240
Wholesale	0	0	1,141	1,125	1,204	2,169	2,040	5,209	4,735
Retail	1,664	1,697	1,563	1,410	1,357	1,923	1,880	1,702	1,506

Figure 1.3.2 is a comparison of retail use vs. wholesale use by year since 2007.

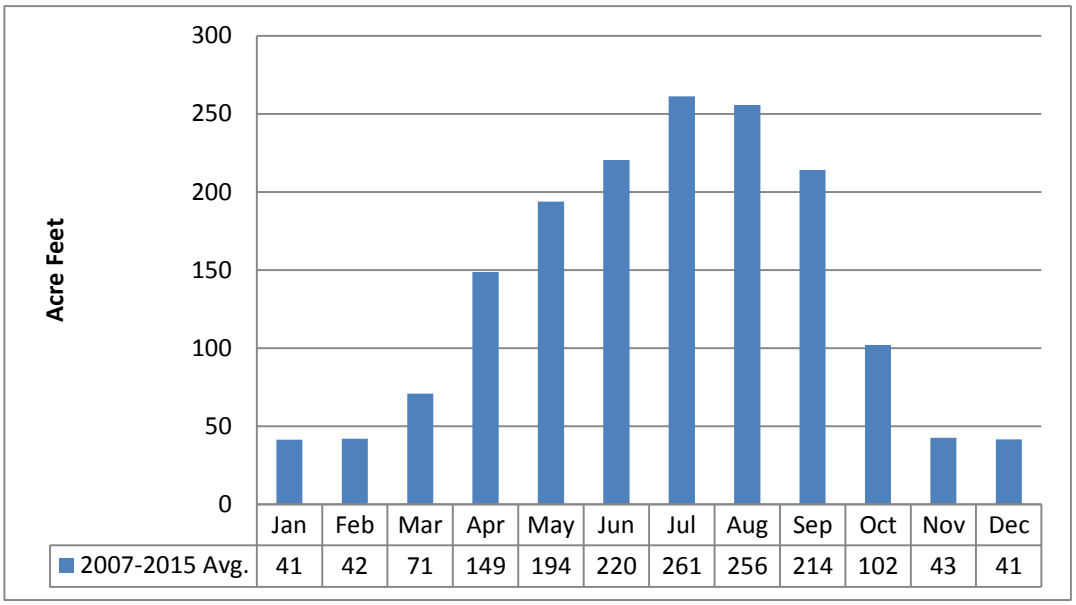
Minden Retail Use

Figure 1.3 shows the average acre feet of water used by month for 2007 through 2015 for the retail system (residential and commercial use). Peak demand for the Minden system occurs from May through September. The lowest use typically occurs November through February. Use in July (the highest month) is approximately 6 times greater than January (the lowest month).

At the present time, well production less wholesale and commercial sales provides a gross estimate of gallons per capita per day consumption. For 2015, the total Town of Minden retail residential use was approximately 270 gallons per capita per day (gpcd). The State average residential use is 200gpcd according to the Nevada Division of Water Resources, Nevada Water Facts.

It is important to note this calculation currently includes unmetered use by the Town of Minden to maintain Town parks and infrastructure. Furthermore, because not all connections in the Town are metered, there is no way to accurately determine the total percentage of use due to unaccounted-for water loss. The industry average is 10%. Causes for unaccounted-for water loss may include: water leaks from deteriorating infrastructure, under-registering or dead meters, un-metered and unauthorized uses. More accurate determination of gallons per capita per day will become available as residential and Town metering is completed.

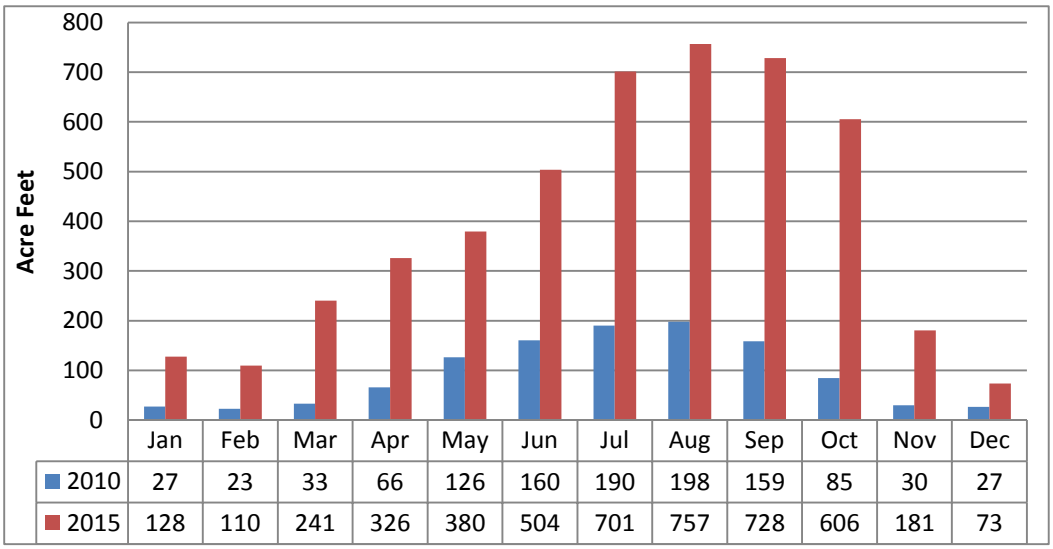
FIGURE 1.3.3 Average Monthly Retail System Use



Wholesale Use

Figure 1.4 shows a comparison of wholesale water used in 2010 to water used in 2015. Peak demand for the Minden wholesale system occurs from May through October. The lowest use typically occurs December through February. Use in August (the highest month) is approximately 10 times greater than December (the lowest month).

FIGURE 1.3.4 Monthly Wholesale System Use 2010 Compared to 2015

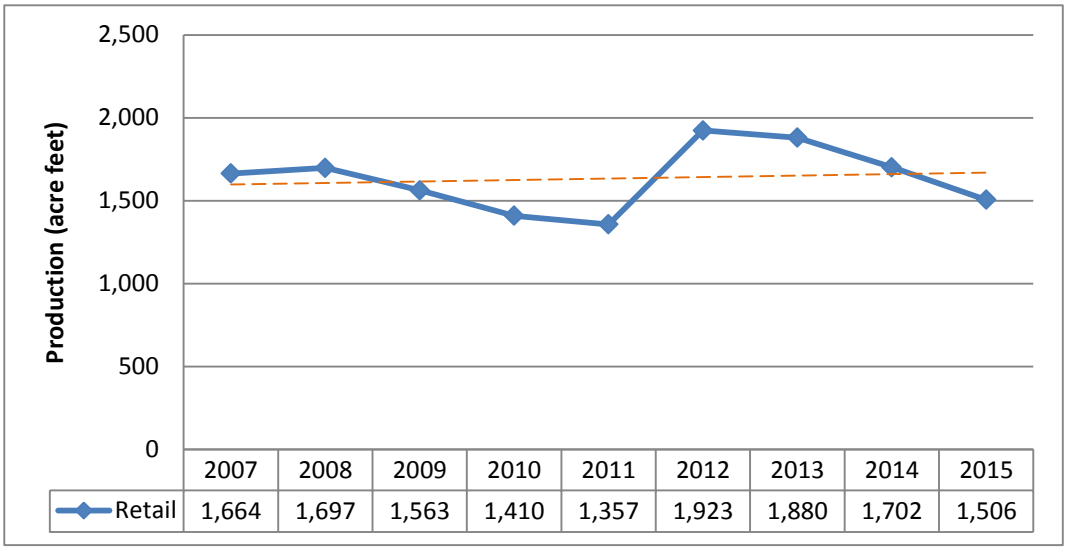


1.4 WATER USE FORCAST

Retail System Water Use Forecast

In the spring of 2015 the Minden Town Board approved a resolution calling for voluntary water use reductions. Based in part on the voluntary conservation efforts of Minden residents, since 2007, retail use decreased by approximately 9% from 1,664 acre feet in 2007 to 1,506 acre feet in 2015.

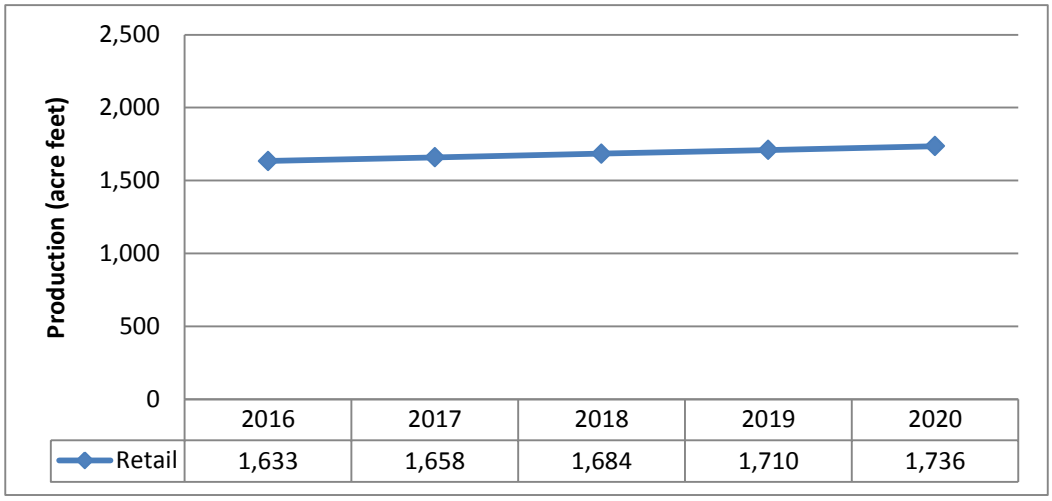
FIGURE 1.4.1 Retail Water Production 2007 through 2014



	2007	2008	2009	2010	2011	2012	2013	2014	2015
Retail	1,664	1,697	1,563	1,410	1,357	1,923	1,880	1,702	1,506

After averaging production from 2007 through 2015, the trend line shown in figure 1.4.1 was used to predict future demand for the retail system through 2020 in figure 1.4.2 below.

FIGURE 1.4.2 Projected Production for Retail Water through 2020 (trend line)



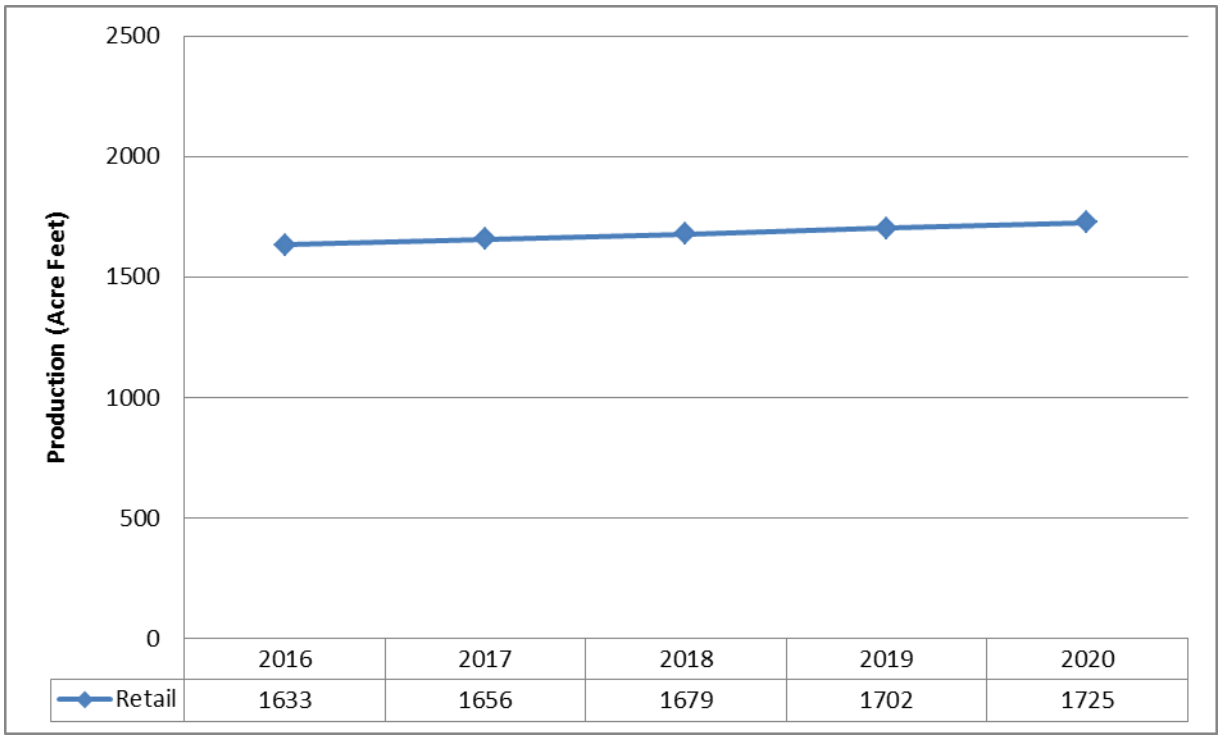
	2016	2017	2018	2019	2020
Retail	1,633	1,658	1,684	1,710	1,736

Table C - Residential Water Permits from 2009 through 2015

Year	Permits Issued
2009	11
2010	3
2011	15
2012	15
2013	34
2014	47
2015	34
Average	23

Based on an estimated 1000 gallons per day use, and assuming the average number of residential water permits issued per year remains constant, projected water use through 2020 is shown in Figure 1.4.3 below.

FIGURE 1.4.3 Projected Production for Retail Water through 2020 (average water permits)



It should be noted over the last six years only four commercial water permits have been issued by Minden Water for new business development. For this reason the average water permits

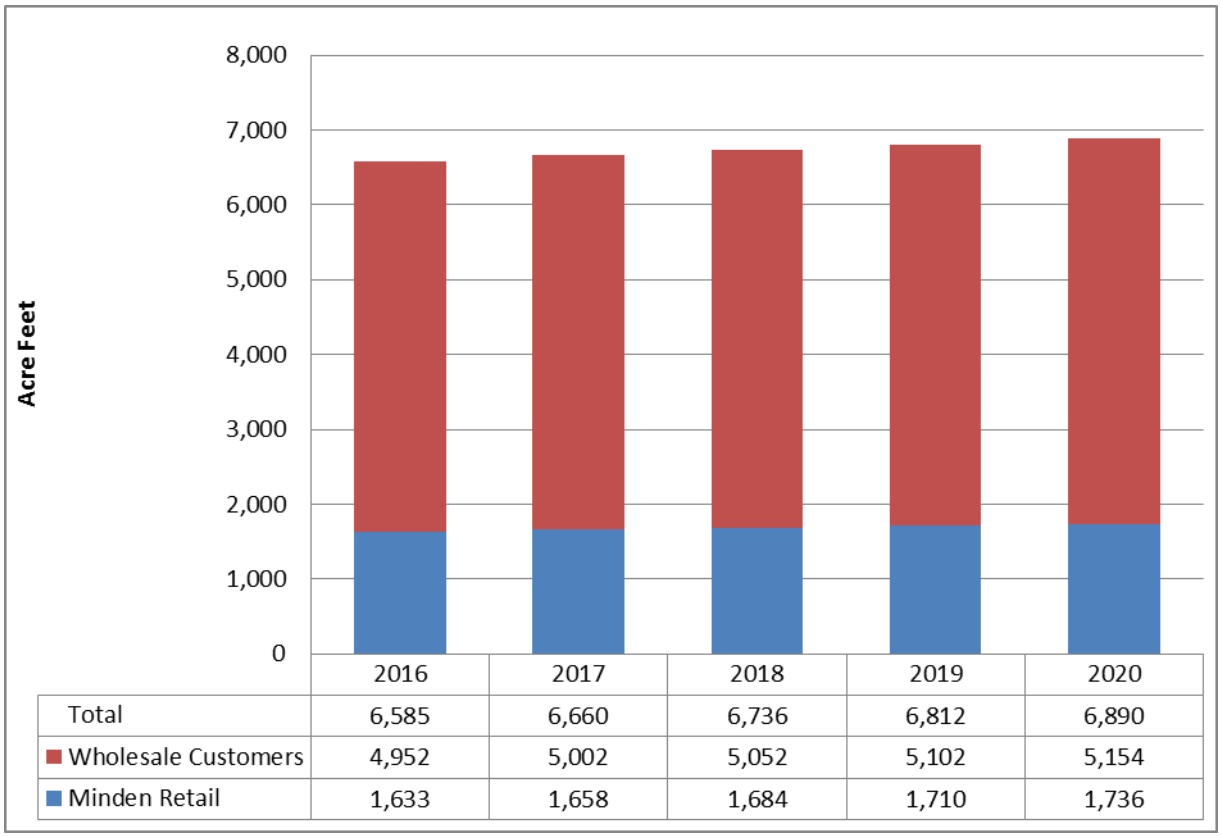
issued estimate does not reflect the number of commercial water permits issued to businesses annually.

The trend line and the average number of residential water permits issued per year provide a conservative range for estimating future water needs for the retail system. As development increases, these projections will need to be adjusted to reflect actuals.

Wholesale System Water Use Forecast

In February of 2016, the Town of Minden accepted a rate study completed by Municipal Financial Services. In the Study the production estimates for the wholesale system were projected based on the Town's estimated use and the delivery requirements of the Wholesale Customers. The data contained in the table below was collected and assembled by Municipal Financial Services and is used here as a conservative range for estimating the future water needs of the wholesale system.

FIGURE 1.4.4 Projected Production for Wholesale Water through 2020



	2016	2017	2018	2019	2020
Total	6,585	6,660	6,736	6,812	6,890
Wholesale Customers	4,952	5,002	5,052	5,102	5,154
Minden Retail	1,633	1,658	1,684	1,710	1,736

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Plan Provisions

In accordance with NRS 540.131, this plan will be reviewed from time-to-time to and updated no less than every five (5) years to comply with NRS 540.131 and NRS 540.141. The next update of this plan is to be on, or before **[[INSERT DATE 5 YRS AFTER ADOPTION]].**

The Town of Minden will appoint a staff member to oversee the conservation efforts and this staff member will be responsible for implementation of conservation programs, monitoring of water use, and will review /suggest revisions to the conservation plan when needed.

In an effort to promote voluntary conservation and aid in Nevada's future, the Town of Minden will enact the conservation measures found in the ***Conservation Measures*** section. When more stringent measures are needed, the Town of Minden will enact the measures found in the ***Contingency Measures*** section. All measures can be found in Appendix A.

As required by NRS 540.141, the water conservation plan must include the following provisions:

a. Public Education
b. Conservation Measures
c. Water Management
d. Contingency Plan
e. Schedule
f. Evaluation Measures
g. Conservation Estimates

Each provision is discussed below.

Public Education

Public education is a key for cooperation with conservation efforts, so funding for public education is crucial. The Town of Minden recognizes this and will establish a conservation education program and corresponding budget, if economically feasible.

It is the goal of the Town of Minden to increase public awareness to conserve water and encourage reduction in lawn sizes, the use of climate-appropriate plants, the use of drip irrigation, and promote water wise practices. The Town of Minden does include water saving tips and information in the quarterly newsletter included with the customer bill.

The conservation education program includes education materials such as bill inserts, pamphlets, flyers, and posters. New customers will be provided these materials when service is established, while existing customers will receive these materials periodically through bill inserts or direct mail and upon request. Education materials should also encourage reduction of lawn sizes, use of drip irrigation, use of climate-appropriate plants, and conservation tips and techniques (see Appendix C).

Customers should also be able to read and understand their water bills. As the universal metering program (discussed below under Conservation Measures) is implemented, customer bills will be reformatted, to include information beyond basic billing information. Bills will include comparisons to previous bills and tips on water conservation that can help customers make informed choices about their water usage. Bill inserts may also include this information.

The Town of Minden may participate in public outreach opportunities such as Earth Day, provide information at a variety of school programs, participate at workshops for plumbers/suppliers/builders, and provide incentives for conservation efforts (e.g. plumbing retrofit rebates, water conservation landscaping rebates, etc.).

The Town of Minden will also conduct a voluntary water conservation audit, at the request of a customer, targeted at identifying specific water conservation and efficiency measures that can be applied by the customer at their residence or business to promote conservation.

Conservation Measures

In an effort to both promote conservation and voluntarily conserve water, the Town of Minden is pursuing water-use regulations to promote water conservation during non-emergency situations. These regulations include the following:

1) Water from the Town's water system shall not be allowed to flood or run-off of applied areas into gutters, waterways, patios, driveways or streets.

2) Hard surfaces including sidewalks, driveways, parking areas, or decks should not be washed or hosed down with water supplied through the Town's potable water system in a manner which results in excessive run-off or waste.

3) Washing of vehicles shall be done only with hoses equipped with an automatic shut off device or at facilities designated as commercial vehicle wash.

4) Use of water for decorative fountains or the filling or topping off of decorative lakes or ponds is discouraged except where those decorative fountains, lakes, or ponds utilize recycled water.

5) Do not water lawns, landscaping and gardens between10:00am and 6:00pm.

6) "Fix it" notices shall be issued to customers with broken sprinkler systems. The customer will be required to make the necessary repairs within two weeks or the Town will turn off water service until the repairs are made.

The Town code includes a provision that water service can be shut off for wasting water. This may be enforced by visual inspection for runoff, following-up on citizen reports, and review of use at metered services. Typically a verbal or written warning shall be issued followed by a shut-

off when cooperation is not forthcoming. There is a $25 fee assessed when water is turned off and an additional $25 fee assessed when service is restored.

The Town intends to adopt a resolution creating a universal metering program requiring water meters to be purchased and installed for all service connections by 2025. This universal metering program will require a meter be purchased for new construction, and in the case of existing homes without meters, on or before the closing of escrow of sale of the home to a new owner or by January 1, 2025 whichever comes first. In addition, the program will require that a meter be purchased and installed after a third wasting water notice is issued resulting in a water shutoff before water service is returned to the property.

In the event these conservation measures are insufficient during times of drought, the Town of Minden may wish to implement the mandatory measures discussed in the ***Drought Contingency Plan*** section below.

The Town of Minden also promotes the development of water conserving principles into the planning, development, and management of new landscape projects such as public parks, building grounds, and golf course. Customers are encouraged to consult with the local nursery or perform an internet search on the availability of water conservation plants and how to renovate existing landscapes. Customers are also encouraged to evaluate irrigation management systems using metering, timing, and water sensing devices.

Water Management

The Town of Minden monitors and records water levels at all well and tank sites. The levels are logged daily as part of the routine well logs as well as being recorded via S.C.A.D.A. system. If levels drop to a point that may affect the productivity of a well, the situation will be evaluated to determine if measures such as a pump height adjusted or enactment of conservation measures must take place.

Working relationships with other local water purveyors are maintained to ensure adequate water supplies are available. The Town of Minden has intertie connections with both Douglas County Utilities and Gardnerville Town Water that would allow access to water in the event of a system emergency.

The Town of Minden actively monitors unaccounted for water losses. Production versus sales and authorized usage allows the determination of unaccounted for water losses. Current-to-historical same-month comparisons of production are also performed to determine the likelihood of water loss. Further investigations are performed to locate leaks, if significant differences are found.

When leaks are discovered they are repaired within a timeframe that is determined by the severity of the leak and the accessibility of the leaking portion of the distribution system.

The system is divided into two pressure zones that are separated by a pressure regulation station. Residential customers are kept at a desirable pressure and commercial customers are in a zone of

greater pressure. The commercial customers handle the pressure issues by use of individual pressure reducing valves.

The Town of Minden has a formal well head protection program. This program involves the identification of hazards as well as control of activities within the surrounding areas of the system's wells.

The Town of Minden has implemented a meter replacement program for all meters that are not registering properly. All commercial meters are tested every two years and replaced if under-registering by more than 5%. All residential meters are tested every 10 years, and replaced if under-registering by more than 5%.

The Town of Minden has a capital improvement plan which is currently being funded through rates and there are plans to replace distribution lines at or before the end of their anticipated useful life.

The Town of Minden does not have a system for reusing effluent. Wastewater is collected from the service area by Minden Gardnerville Sanitation District (a separate entity) who treats it at a regional plant and reuses the effluent for agricultural purposes.

Douglas County has adopted a Plumbing Water Conservation Ordinance which applies to structures which are renovated as well as all new construction. This ordinance is furnished to local suppliers and contractors. The Douglas County Community Development checks new construction, renovation, and expansions within Douglas County to ensure compliance with this ordinance.

Drought Contingency Plan

The objective of the contingency plan would be to manage the available resources to ensure continued supply of potable water during periods of drought or extended drought.

It is envisioned that voluntary conservation will be sufficient to ensure an adequate supply of water and reduce water usage. However, if a sustained drought (lack of precipitation) is encountered, it may be necessary to implement mandatory restrictions in order to ensure an adequate supply of water to meet essential needs.

Town staff will monitor predetermined trigger points identified for each stage of drought listed below. When a trigger point has been reached, Staff will bring the information assembled to the Minden Town Board for possible action. The Board will thoughtfully and carefully weigh the information presented to determine which drought stage declaration (if any) is appropriate at that time.

The Town of Minden Drought Contingency Plan (see Appendix A) is divided into four (4) stages: (1) warning stage, (2) alert stage, (3) emergency stage, (4) extreme emergency stage.

When a drought is declared over, water conservation measures practiced during normal years (see ***Conservation Measures*** section) will be reinstated and water supplies would continue to be monitored.

Implementation Schedule

Each of the conservation measures listed, with the exception of the universal metering program and the reformatting of customer bills, is currently in place and is actively working to achieve results. The Town of Minden intends to adopt and begin implementing a ten year mandatory universal metering program on a date determined by the Minden Town Board. . Customer bills will be reformatted with customer use and conservation information by January 2020.

Evaluation Measurements

Because not all residential customers are currently metered, it is impossible to determine the effectiveness of each plan element on an individual customer basis. However, the Town of Minden can evaluate the effectiveness of each plan element from the perspective of the whole system. In that regard, as a plan element is activated (e.g. mailing literature or declaring a drought stage), production figures will be compared to same-month historical data to estimate the plan element's effectiveness. This information will be utilized as a basis for any future water conservation plan revision and plan elements.

If there is a decrease in production as a result of a particular measure/incentive, that measure/incentive can be expanded or improved upon, if possible. If it is discovered that a particular measure/incentive is ineffective, it will be discontinued and a new one can then be implemented to take its place.

As a plan element is activated (e.g. mailing literature or declaring a drought stage), production figures will be compared to same-month historical data to estimate the plan element's effectiveness. This information will be utilized as a basis for any future water conservation plan revision and plan elements.

Usage amounts measured will include summer use, average use per connection, and per capita use.

In addition to changes resulting from audits, updates, and modifications to conservation measures/incentives there will be changes made to meet changing conditions (e.g. customer growth and demand, changing use, new technologies, etc.).

Conservation Estimates

It is estimated that metering alone will be the major driver of conservation, by raising awareness of individual account use. Metering alone, without a rate structure change, but with the public education elements, can be expected to provide a 10% reduction in water use over time.

During the Stage 1 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 5-8 % reduction in water use.

During the Stage 2 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 8-12 % reduction in water use.

During the Stage 3 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 12-15 % reduction in water use.

During the Stage 4 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 15-30 % reduction in water use.

The estimated water savings for various end-user efforts can be found in Appendix C.

Rate Analysis

The charging of variable rates for the use of water has sometimes been shown to encourage conservation of water, but not in all systems. Oftentimes the end-user will continue to pay increasing block rates out of necessity for the water used. The use of variable water rates needs to be evaluated on a case-by-case basis.

At this time the Town of Minden does not anticipate any further water conservation savings due to a change in rate structure. The Town Minden will continue to monitor the water usage and will re-visit this issue each time rates are reviewed. If so warranted, a change in rates will occur and this conservation plan will be updated to reflect the revised rates. Water rates are reviewed annually by the Minden Town Board.

Table D – Flat Rate Residential Customers

Meter Size	Number	Monthly Fee	Quantity Fee ($/gallon)
Residential			
Single Family	1076	$28.95	N/A
Patio Home	295	$25.60	N/A
Office Residential	0	$28.95	N/A
Out of area Residential	53	$38.80	N/A

Commercial customers are billed monthly in addition to a tiered quantity charge. The fees are detailed in the following table (Table E).

Table E – Commercial Customers and Usage Charges

Meter Size	Number	Monthly Fee	Quantity Fee ($/thousand gallon)
Commercial			
¾ -inch	54	24.05	0-50 thousand = $1.50 50-100 thousand = $1.65 Over 100 thousand = $1.85
1-inch	61	$27.30	0-50 thousand = $1.50 50-100 thousand = $1.65 Over 100 thousand = $1.85
1 ½ -inch	31	$37.60	0-50 thousand = $1.50 50-100 thousand = $1.65 Over 100 thousand = $1.85
2-inch	60	$61.40	0-50 thousand = $1.50 50-100 thousand = $1.65 Over 100 thousand = $1.85
3-inch	9	$122.75	0-50 thousand = $1.50 50-100 thousand = $1.65 Over 100 thousand = $1.85
4-inch	7	$151.45	0-50 thousand = $1.50 50-100 thousand = $1.65 Over 100 thousand = $1.85
Out of Area Commercial			
¾-inch	0	$32.25	0-50 thousand = $2.05 50-100 thousand = $2.25 Over 100 thousand = $2.50
1-inch	1	$36.60	0-50 thousand = $2.05 50-100 thousand = $2.25 Over 100 thousand = $2.50
1 ½-inch	1	$50.40	0-50 thousand = $2.05 50-100 thousand = $2.25 Over 100 thousand = $2.50
2-inch	9	$82.30	0-50 thousand = $2.05 50-100 thousand = $2.25 Over 100 thousand = $2.50
3-inch	0	$164.50	0-50 thousand = $2.05 50-100 thousand = $2.25 Over 100 thousand = $2.50
4-inch and larger	1	$203.60	0-50 thousand = $2.05 50-100 thousand = $2.25 Over 100 thousand = $2.50

Table F – Wholesale Customers and Usage Charges

Meter Size	Number	Monthly Fee	Quantity Fee ($/Thousand gallons)
Intertie			
Gardnerville Town Water 8-inch	1	$0.00	Mutual Aide No Fee, Emergency Supply
Douglas County Utilities 24-inch	1	$0.00	$0.56

APPENDIX A
DROUGHT CONTINGENCY PLAN

TOWN OF MINDEN

DROUGHT CONTINGENCY PLAN

Stage 1 – Warning Stage

Trigger

The Warning Stage may occur when total precipitation is below normal for the months of October through March. Information regarding Snowpack, Stream-flow Forecasts, and Reservoir Capacity as reported in the USDA Natural Resources Conservation Service Nevada Water Supply Outlook in April of each year for the Lake Tahoe, Truckee and Carson River Basins will be considered.

Measures

1. The Town of Minden shall attempt to increase public awareness of the water supply situation and the need to conserve.

2. The Town may adopt a resolution calling for the following voluntary conservation measures in addition to any water-use regulations applicable to the Town as discussed in the Conservation Measures section above Such voluntary measures may include:
   - Water from the Town's water system should not be allowed to pool, pond, or run-off of applied areas.

   - Hard surfaces including sidewalks, driveways, parking areas, or decks should not be washed or hosed down with water supplied through the Town's potable water system unless required by health and safety requirements.

   - Washing of vehicles should be done only with hoses equipped with an automatic shut off device or at facilities designated as commercial vehicle wash.

   - Water used for watering lawns and landscaping, should be limited to three days per week as follows:

     a. Residences with even numbered addresses, common areas or multiple units served by one connection, should water only on Monday, Wednesday, & Friday;

     b. Residences with odd numbered addresses and commercial and industrial customers should water only on Tuesday, Thursday & Saturday;

   - All watering of lawns, landscaping, and gardens should not occur between the hours of 10:00 am and 6:00 pm.

   - Use of water for decorative purposes is discouraged.

3. The Town's wholesale water customers, Douglas County, Indian Hills General Improvement District and Carson City, shall be strongly encouraged by the Town to immediately implement voluntary conservation measures for each respective system consistent with the voluntary conservation measures adopted by Minden.

4. "Fix it" notices shall be issued to customers with broken sprinkler systems. The customer will be required to make the necessary repairs within one week or the Town will turn off water service until the repairs are made.

The Town code includes a provision that water service can be shut off for wasting water. This may be enforced by visual inspection for runoff, following-up on citizen reports, and review of use at metered services. Typically a verbal or written warning shall be issued followed by a shut-off when cooperation is not forthcoming. There is a $25 fee assessed when water is turned off and an additional $25 fee assessed when service is restored.

The Town intends to adopt a resolution creating a universal metering program requiring water meters to be purchased and installed for all service connections by 2025. This universal metering program will require a meter be purchased for new construction, and in the case of existing homes without meters, on or before the closing of escrow of sale of the home to a new owner or by January 1, 2025 whichever comes first. In addition, the program will require that a meter be purchased and installed after a third wasting water notice is issued resulting in a water shutoff before water service is returned to the property.

Stage 2 – Alert Stage

Trigger

The Alert Stage may occur when total precipitation is below normal for the months of October through March for three or more consecutive years. Information regarding Snowpack, Stream-flow Forecasts, and Reservoir Capacity as reported in the USDA Natural Resources Conservation Service Nevada Water Supply Outlook in April of each year for the Lake Tahoe, Truckee and Carson River Basins will be considered.

Measures

1. The Town of Minden shall set conservation goals and call for wide-based community support to achieve those goals.

2. The Town of Minden shall adopt a resolution calling for the following mandatory conservation measures (these measures shall be in addition to or supersede those included in the Warning Stage 1):

    - Water from the Town's water system shall not be allowed to pool, pond, or run-off of applied areas.

- Hard surfaces including sidewalks, driveways, parking areas, or decks may not be washed or hosed down with water supplied through the Town's potable water system unless required by health and safety requirements.

- Washing of vehicles shall be done only with hoses equipped with an automatic shut off device or at facilities designated as commercial vehicle wash.

- Water used for watering lawns and landscaping, shall be limited to three days per week as follows:

    a. Residences with even numbered addresses, common areas or multiple units served by one connection, may water only on Monday, Wednesday, & Friday;

    b. Residences with odd numbered addresses and commercial and industrial customers may water only on Tuesday, Thursday & Saturday;

- <u>All</u> watering of lawns, landscaping, and gardens shall not occur between the hours of 10:00 am and 6:00 pm.

- Use of water for decorative purposes is prohibited.

3. The Town's wholesale water customers, Douglas County, Indian Hills General Improvement District and Carson City, shall be strongly encouraged by the Town to immediately implement mandatory conservation measures for each respective system consistent with the mandatory conservation measures adopted by Minden.

4. The use of fire hydrants shall be limited to fire protection uses only.

5. "Fix it" notices shall be issued to customers with broken sprinkler systems. The customer will be required to make the necessary repairs within one week or the Town will turn off water service until the repairs are made.

The Town code includes a provision that water service can be shut off for wasting water. This may be enforced by visual inspection for runoff, following-up on citizen reports, and review of use at metered services. Typically a verbal or written warning shall be issued followed by a shut-off when cooperation is not forthcoming. There is a $25 fee assessed when water is turned off and an additional $25 fee assessed when service is restored.

The Town intends to adopt a resolution creating a universal metering program requiring water meters to be purchased and installed for all service connections by 2025. This universal metering program will require a meter be purchased for new construction, and in the case of existing homes without meters, on or before the closing of escrow of sale of the home to a new owner or by January 1, 2025 whichever

comes first. In addition, the program will require that a meter be purchased and installed after a third wasting water notice is issued resulting in a water shutoff before water service is returned to the property.

If any customer seeks a variance from the provisions of Stage 2, then that customer shall notify the Town of Minden in writing, explaining in detail the reason for such a variation. The Town of Minden shall respond to each request.

Stage 3 – Emergency Stage

Trigger

The Emergency Stage may occur when groundwater levels are significantly below normal. Town Staff will monitor the depths of wells operated by the Town and those wells included in the voluntary well monitoring program. When the Town Engineer determines well depths have dropped to a predetermined level for each well, and those levels are not recovering after sustained periods of rest, staff will advise the Town Board of the condition and make a recommendation regarding a possible Drought Emergency Stage declaration.

Measures

1. The Town of Minden shall proclaim a water shortage emergency and use media relations to supplement efforts to keep customers informed.

2. The Town of Minden shall set rationing benchmarks for each customer class.

3. The Town of Minden shall adopt a resolution calling for the following mandatory water restrictions (these measures shall be in addition to or supersede those included in the Warning Stage 1 and Alert Drought Stage 2):

    - Water used for watering lawns and landscaping, shall be limited to two days per week as follows:

        a. Residences with even numbered addresses, common areas or multiple units served by one connection, may water only on Monday and Wednesday;

        b. Residences with odd numbered addresses and commercial and industrial customers may water only on Tuesday and Thursday;

4. The Town's wholesale water customers, Douglas County, Indian Hills General Improvement District and Carson City, shall be strongly encouraged by the Town to immediately implement mandatory conservation measures for each respective system consistent with the mandatory conservation measures adopted by Minden.

5. The use of fire hydrants shall be limited to fire protection uses only.

6. Watering from the town's water system used for general construction or maintenance activities, including dust control, compaction and concrete curing, is considered a waste of water and as such is not permitted.

7. "Fix it" notices shall be issued to customers with broken sprinkler systems. The customer will be required to make the necessary repairs within 72 hours or the Town will turn off water service until the repairs are made.

8. The Town of Minden would seek monetary assistance in an effort to mitigate the drought (e.g. federal funding).

The Town code includes a provision that water service can be shut off for wasting water. This may be enforced by visual inspection for runoff, following-up on citizen reports, and review of use at metered services. Typically a verbal or written warning shall be issued followed by a shut-off when cooperation is not forthcoming. There is a $25 fee assessed when water is turned off and an additional $25 fee assessed when service is restored.

The Town intends to adopt a resolution creating a universal metering program requiring water meters to be purchased and installed for all service connections by 2025. This universal metering program will require a meter be purchased for new construction, and in the case of existing homes without meters, on or before the closing of escrow of sale of the home to a new owner or by January 1, 2025 whichever comes first. In addition, the program will require that a meter be purchased and installed after a third wasting water notice is issued resulting in a water shutoff before water service is returned to the property.

If any customer seeks a variance from the provisions of Stage 3, then that customer shall notify the Town of Minden in writing, explaining in detail the reason for such a variation. The Town of Minden shall respond to each request.

Stage 4 – Extreme Emergency Stage

Trigger
The Extreme Emergency Stage should be declared when the Town is facing a water shortage and is unable to meet projected water demand.

Measures

1. The Town of Minden shall declare a water shortage extreme emergency and use media relations to supplement efforts to keep customers informed.

2. The Town of Minden shall set rationing benchmarks for each customer class.

3. The Town of Minden shall adopt a resolution calling for the following mandatory water restrictions (these restrictions shall be in addition to or supersede those included in the Warning Stage 1, Alert Drought Stage 2 and Emergency Drought Stage 3):

    - The planting of new lawns is prohibited from July through September.

- During the months of December, January and February all watering of vegetation, including lawns, landscaping and gardens is prohibited.

- From March 1st through May 31st and from September 1st through November 30th all watering of vegetation, including lawns, landscaping and gardens shall be limited to one day per week as follows:

    a. Residences with even numbered addresses, common areas or multiple units served by one connection, may water only on Monday or Wednesday;

    b. Residences with odd numbered addresses and commercial and industrial customers may water only on Tuesday or Thursday.

- Between June 1st and August 31st, Water used for watering lawns and landscaping, shall be limited to two days per week as follows:

    a. Residences with even numbered addresses, common areas or multiple units served by one connection, may water only on Monday and Wednesday;

    b. Residences with odd numbered addresses and commercial and industrial customers may water only on Tuesday and Thursday.

4. The Town's wholesale water customers, Douglas County, Indian Hills General Improvement District and Carson City, shall be strongly encouraged by the Town to immediately implement mandatory conservation measures for each respective system consistent with the mandatory conservation measures adopted by Minden.

5. The use of fire hydrants shall be limited to fire protection uses only.

6. Watering from the town's water system used for general construction or maintenance activities, including dust control, compaction and concrete curing, is considered a waste of water and as such is not permitted.

7. "Fix it" notices shall be issued to customers with broken sprinkler systems. The customer will be required to make the necessary repairs within 48 hours or the Town will turn off water service until the repairs are made.

8. The Town of Minden would seek monetary assistance in an effort to mitigate the drought (e.g. federal funding).

The Town code includes a provision that water service can be shut off for wasting water. This may be enforced by visual inspection for runoff, following-up on citizen reports, and review of use at metered services. Typically a verbal or written warning shall be issued followed by a shut-

off when cooperation is not forthcoming. There is a $25 fee assessed when water is turned off and an additional $25 fee assessed when service is restored.

The Town intends to adopt a resolution creating a universal metering program requiring water meters to be purchased and installed for all service connections by 2025. This universal metering program will require a meter be purchased for new construction, and in the case of existing homes without meters, on or before the closing of escrow of sale of the home to a new owner or by January 1, 2025 whichever comes first. In addition, the program will require that a meter be purchased and installed after a third wasting water notice is issued resulting in a water shutoff before water service is returned to the property.

If any customer seeks a variance from the provisions of Stage 4, then that customer shall notify the Town of Minden in writing, explaining in detail the reason for such a variation. The Town of Minden shall respond to each request.

APPENDIX B
PUBLIC EDUCATION MATERIALS

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Resources

There are several publications available for use at U.S. EPA website for general distribution (currently located at http://epa.gov/watersense/pubs/index.htm#ideas). These publications include such topics as:

- Simple Steps to Save Water,
- Ideas for Residences,
- Ideas for Commercial,
- Using Water Wisely In the Home,
- Outdoor Water Use in the US,
- Toilet Flush Facts,
- Watering Can Be Efficient,
- Irrigation Timers for the Homeowner, and
- Water Efficient Landscaping,

These publications can be utilized until the Town of Minden develops system-specific publications.

There are also numerous website that provide tips for conserving water. One of these is: http://www.wateruseitwisely.com/100-ways-to-conserve/index.php. Customers can be directed to this website for tips to conserve water.

Specific tips for landscaping that can be provided to the customers are listed below. During drought conditions outdoor watering restrictions may be imposed, and therefore some of the following tips will not apply.

Tips for Landscaping

Watering:

- Detect and repair all leaks in irrigation systems.
- Use properly treated wastewater for irrigation where available.
- Water the lawn or garden during the coolest part of the day (early morning is best). Do not water on windy days.
- Water trees and shrubs, which have deep root systems, longer and less frequently than shallow-rooted plants which require smaller amounts of water more often. Check with the local nursery for advice on the amount and frequency of watering needed in your area.
- Set sprinklers to water the lawn or garden only—not the street or sidewalk.
- Use soaker hoses and trickle irrigation systems.
- Install moisture sensors on sprinkler systems.

Planting:

- Have your soil tested for nutrient content and add organic matter if needed. Good soil absorbs and retains water better.
- Minimize turf areas and use native grasses.
- Use native plants in your landscape—they require less care and water than ornamental varieties.
- Add compost or peat moss to soil to improve its water-holding capacity.

Maintaining:

- Use mulch around shrubs and garden plants to reduce evaporation from the soil surface and cut down on weed growth.
- Remove thatch and aerate turf to encourage movement of water to the root zone.
- Raise your lawn mower cutting height to cut grass no shorter than three inches—longer grass blades encourages deeper roots, help shade soil, cut down on evaporation, and inhibit weed growth.
- Minimize or eliminate fertilizing which requires additional watering, and promotes new growth which will also need additional watering.

Ornamental Water Features:

- Do not install or use ornamental water features unless they recycle the water. Use signs to indicate that water is recycled. Do not operate during a drought.

APPENDIX C
END-USER WATER SAVINGS

End-User Water Savings

Leaky Faucets

Issue: Leaky faucets that drip at the rate of one drip per second can waste more than 3,000 gallons of water each year.

Fix: If you're unsure whether you have a leak, read your water meter before and after a two-hour period when no water is being used. If the meter does not read exactly the same, you probably have a leak.

Leaky Toilets

Issue: A leaky toilet can waste about 200 gallons of water every day.

Fix: To tell if your toilet has a leak, place a drop of food coloring in the tank; if the color shows in the bowl without flushing, you have a leak.

Showering

Issue: A full bath tub requires about 70 gallons of water, while taking a five-minute shower uses 10 to 25 gallons.

Fix: If you take a bath, stopper the drain immediately and adjust the temperature as you fill the tub.

Brushing Teeth Wisely

Issue: The average bathroom faucet flows at a rate of two gallons per minute.

Fix: Turning off the tap while brushing your teeth in the morning and at bedtime can save up to 8 gallons of water per day, which equals 240 gallons a month!

Watering Wisely

Issue: The typical single-family suburban household uses at least 30 percent of their water outdoors for irrigation. Some experts estimate that more than 50 percent of landscape water use goes to waste due to evaporation or runoff caused by overwatering.

Fix: Drip irrigation systems use between 20 to 50 percent less water than conventional in-ground sprinkler systems. They are also much more efficient than conventional sprinklers because no water is lost to wind, runoff, and evaporation. If the in-ground system uses 100,000 gallons annually, you could potentially save more than 200,000 gallons over the lifetime of a drip irrigation system should you choose to install it. That adds up to savings of at least $1,150!

Washing Wisely

Issue: The average washing machine uses about 41 gallons of water per load.

Fix: High-efficiency washing machines use less than 28 gallons of water per load. To achieve even greater savings, wash only full loads of laundry or use the appropriate load size selection on the washing machine.

Flushing Wisely

Issue: If your toilet is from 1992 or earlier, you probably have an inefficient model that uses at least 3.5 gallons per flush.

Fix: New and improved high-efficiency models use less than 1.3 gallons per flush—that's at least 60 percent less than their older, less efficient counterparts. Compared to 3.5 gallons per flush toilet, a WaterSense labeled toilet could save a family of four more than $90 annually on their water bill, and $2,000 over the lifetime of the toilet.

Dish Washing Wisely

Issue: Running dishwasher partial full and pre-rinsing dishes before loading the dishwasher.

Fix: Run the dishwasher only when it’s full and use the rinse-and-hold dishwasher feature until you’re reading to run a full load. Pre-rinsing dishes does not improve cleaning and skipping this step can save you as much as 20 gallons per load, or 6,500 gallons per year. New water-saver dishwashers use only about 4 gallons per wash.

Estimated water savings from EPA Conservation Guidelines 1998 (Appendix B, Table B-1):

Type	Estimated Usage (gpcpd)	Conservation Usage (gpcpd)	Savings (gpcpd)	Savings (%)
Toilet	18.3	10.4	7.9	43 %
Clothes Washers	14.9	10.5	4.4	30 %
Showers	12.2	10.0	2.2	18 %
Faucets	10.3	10.0	.3	3 %
Leaks	6.6	1.5	5.1	77 %

Benchmarks from selected conservation measures from EPA Conservation Guidelines 1998 (Appendix B, Table B-2):

Category	Measure	Reduction of End Use (% or gpcpd)
Universal metering	Connection metering	20 %
	Sub metering	20 – 40 %
Costing and pricing	10% increase in residential prices	2 – 4 %
	10% increase in non-residential prices	5 – 8 %
	Increasing-block rate	5 %
Information and education	Public education and behavior changes	2 – 5 %
End-use audits	General industrial water conservation	10 – 20 %
	Outdoor residential use	5 – 10 %
	Large landscape water audit	10 – 20 %
Retrofits	Toilet tank displacement devices (for toilets using > 3.5 gallons/flush)	2 – 3 gpcpd
	Toilet retrofit	8 – 14 gpcpd
	Showerhead retrofit (aerator)	4 gpcpd
	Faucet retrofit (aerator)	5 gpcpd
	Fixture leak repair	0.5 gpcpd
	Governmental building (indoors)	5 %
Pressure management	Pressure reduction, system	3 – 6 % of total production
	Pressure-reducing valves, residential	5 – 30%
Outdoor water use efficiency	Low water-use plants	7.5 %
	Lawn watering guides	15 – 20 %
	Large landscape management	10 – 25%
	Irrigation timer	10 gpcpd
Replacements and promotions	Toilet replacement, residential	16 – 20 gpcpd
	Toilet replacement, commercial	16 – 20 gpcpd
	Showerhead replacement	8.1 gpcpd
	Faucet replacement	6.4 gpcpd
	Clothes washers, residential	4 – 12 gpcpd
	Dishwashers, residential	1 gpcpd
	Hot water demand units	10 gpcpd
Water-use regulation	Landscape requirements for new developments	10 – 20 % in sector
	Greywater reuse, residential	20 – 30 gpcpd