



## Step 7 – Integrate Resources and Modify Forecasts

### 7.1 Revise Demand Forecast

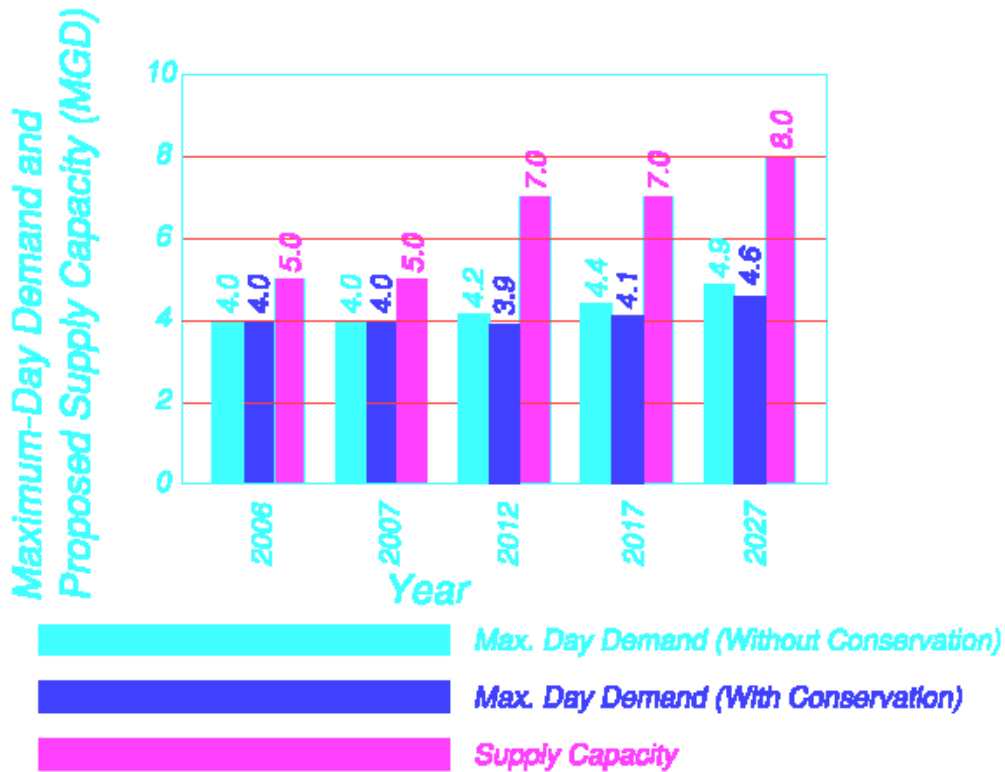
Table 7.1a – St. Charles Mesa Water District Modified Demand Forecast

Worksheet 7-1: Modified Demand Forecast

| Line | Item  | Current Year | Year 5    | Year 10   | Year 20   |
|------|---|--------------|-----------|-----------|-----------|
| 1    | Average-day demand before conservation [a]  | 1,988,678    | 2,091,774 | 2,197,192 | 2,424,242 |
| 2    | Average-day demand after conservation [b]   |              | 1,961,424 | 2,066,841 | 2,293,891 |
| 3    | Reduction in Average-day demand (line 1 less line 2)                                    |              | 130,350   | 130,350   | 130,350   |
| 4    | Maximum-day demand before conservation [a]  | 4,000,000    | 4,207,367 | 4,419,401 | 4,876,086 |
| 5    | Maximum-day demand after conservation [b]   |              | 3,946,666 | 4,158,701 | 4,615,386 |
| 6    | Reduction in Maximum-day demand (line 4 less line 5)                                    |              | 260,700   | 260,700   | 260,700   |
| 7    | Ration maximum-day to average-day demand before conservation (line 4 divided by line 1) | 2.01         | 2.01      | 2.01      | 2.01      |
| 8    | Ration maximum-day to average-day demand after conservation (line 5 divided by line 2)  |              | 1.89      | 1.89      | 1.90      |



Figure 7.1b – St. Charles Mesa Water District Maximum-Day Demand and Proposed Supply Capacity (With and Without Conservation)





## 7.1 Identify Project Specific Savings

The following Table 7.2 is from Worksheet 7-2, which details the savings from postponing the installation of a 2 MGD filter, for 10 years

Table 7.2 – St. Charles Mesa Water District Project Specific Savings

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| Worksheet 7-2: Project-Specific Savings   |  |                          |                          |                             |
|---|--|--------------------------|--------------------------|-----------------------------|
| <b>DESCRIPTION OF PROJECT [a]</b> Installation of an additional 2MGD filter   |  |                          |                          |                             |
| Describe the project: The installation of a 2MGD filter unit at the main treatment plant located at 29850 South Road, in the year 2012. This may be postponed until 2022. |  |                          |                          |                             |
| Project was scheduled to begin: May, 2012   |  |                          |                          |                             |
| Purpose of the project: Additional Supply Capacity <input type="checkbox"/> Improvement <input checked="" type="checkbox"/> Addition <input type="checkbox"/>             |  |                          |                          |                             |
| The project is designed to meet: <input type="checkbox"/> Avg.-day <input checked="" type="checkbox"/> Max.-day   |  |                          |                          |                             |
| Type of project: <input type="checkbox"/> Source of supply  |  |                          |                          |                             |
| <input checked="" type="checkbox"/> Water treatment facilities  |  |                          |                          |                             |
| <input type="checkbox"/> Treated water storage  |  |                          |                          |                             |
| <input type="checkbox"/> Major transmission lines   |  |                          |                          |                             |
| <input type="checkbox"/> Purchased water  |  |                          |                          |                             |
| <input type="checkbox"/> Wastewater facility  |  |                          |                          |                             |
| <input type="checkbox"/> Other  |  |                          |                          |                             |
| Line  | Item   | Project Capacity (Daily) | Project Costs            |                             |
|   |  |                          | Total capital costs (\$) | Annual operating costs (\$) |
| <b>A</b>  | <b>CAPITAL PROJECT IS ELIMINATED</b>           |                          |                          |                             |
| 1   | Original Project                               |                          |                          |                             |
| 2   | Savings from elimination (Equals line 1)       |                          |                          |                             |
| <b>B</b>  | <b>CAPITAL PROJECT IS DOWNSIZED</b>            |                          |                          |                             |
| 3   | Original project                               |                          |                          |                             |
| 4   | Downsized project                              |                          |                          |                             |
| 5   | Savings from downsizing (line 3 less line 4)   |                          |                          |                             |
| <b>C</b>  | <b>CAPITAL PROJECT IS POSTPONED</b>            |                          |                          |                             |
| 6   | Present value of original project              |                          | \$538,032.46             | \$35,000.00                 |
| 7   | Present value of postponed project             |                          | \$655,858.57             | \$426,648.05                |
| 8   | Savings from postponement (line 6 less line 7) |                          | \$117,826.11             | \$544,474.15                |



|          |  |  |  |  |
|----------|--|--|--|--|
| <b>D</b> | <b>NEED FOR PURCHASED WATER IS REDUCED</b>           |  |  |  |
| 9        | Original estimate of purchases                       |  |  |  |
| 10       | Revised estimate of purchases (can be "0")           |  |  |  |
| 11       | Savings from reduced purchases (line 9 less line 10) |  |  |  |

## 7.2 Revise Supply-Capacity Forecast

At present, there are no CIP's, associated with the distribution system, which are intended to be removed or delayed by the conservation measures mentioned above. This is mainly due to the fact that the areas which have been targeted for replacement, in the CIP, are comprised of the oldest, most undersized portion of the distribution system. The improvements outlined in the CIP are also intended to increase the efficiency of the distribution system, and help eliminate potential leaks.

Table 7.3 – St. Charles Mesa Water District Modified Supply Forecast

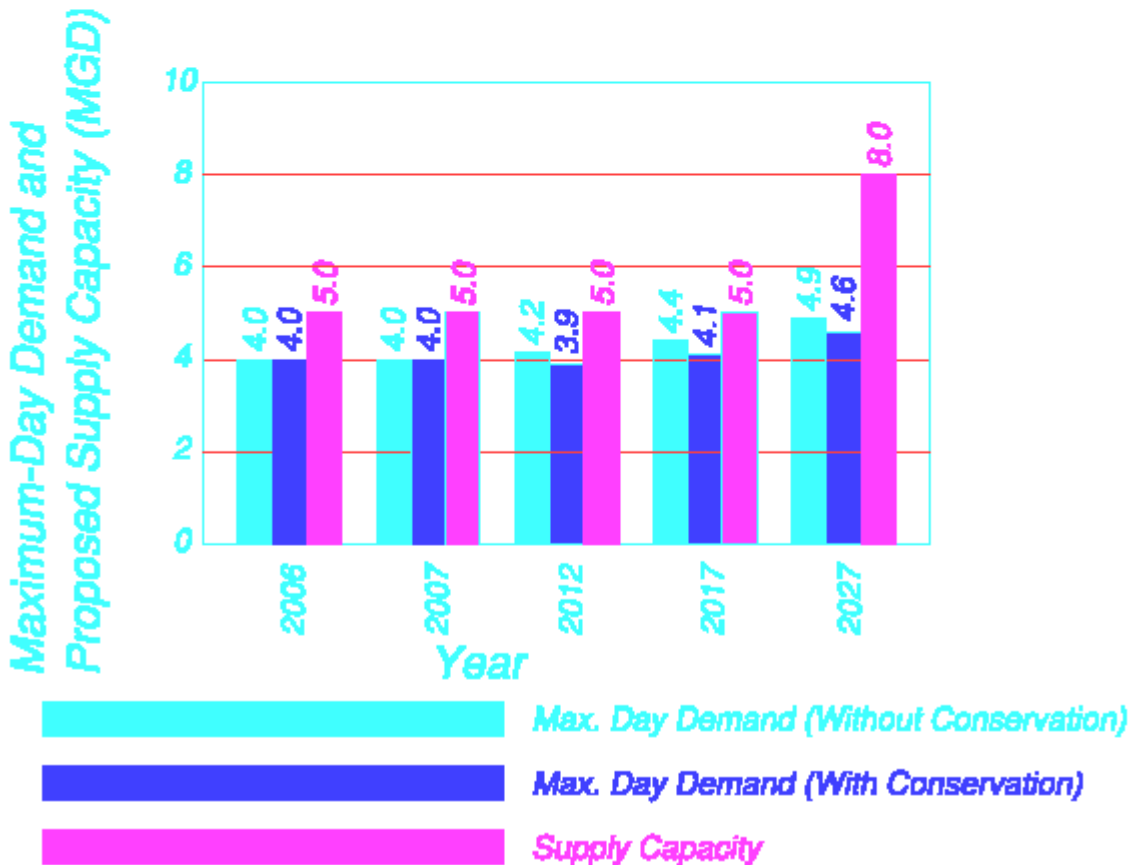
### Worksheet 7-3: Modified Supply Forecast and Estimated Total Savings

| MODIFIED SUPPLY FORECAST |   |              |           |           |           |
|--------------------------|---|--------------|-----------|-----------|-----------|
| Line                     | Item  | Current Year | Year 5    | Year 10   | Year 20   |
| <b>A</b>                 | <b>Forecast Supply Capacity (Daily)</b>                           |              |           |           |           |
| 1                        | Supply capacity before conservation program [a]                   | 3,429,770    | 6,039,648 | 6,039,648 | 6,039,648 |
| 2                        | Planned reduction in supply capacity [b]                          |              | 0         | 0         | 0         |
| 3                        | Supply capacity after conservation (line 1 less line 2)           |              | 6,039,648 | 6,039,648 | 6,039,648 |
| <b>B</b>                 | <b>Capacity Reserve</b>   |              |           |           |           |
| 4                        | Supply capacity less demand (line 3 less line 2 on worksheet 7-1) |              | 1,961,424 | 2,066,841 | 2,293,891 |

The following bar graph represents the Maximum-Day Demand with and without conservation, and the total supply capacity, assuming that the proposed 2MGD upgrade, originally scheduled for 2012, being postponed until 2022.



Figure 7.2 – St. Charles Mesa Water District Maximum-Day Demand and Revised Supply Capacity (With and Without Conservation)



It appears that the 2MGD upgrade in 2012, can be postponed by at least 10 years, and in fact, the 1 MGD upgrade scheduled for 2020 may be sufficient on its own, as a supply capacity of 6.0MGD will be sufficient to meet the demand, particularly if the conservation measures and programs are successful.



### 7.3 Consider Revenue Effects

Table 7.4 – St. Charles Mesa Water District Revenue Effects from Conservation

| Year | # Taps Residential | Growth % | Res. Usage Ac.-Ft. | Projected Savings Ac.-Ft. | Revised Usage Forecast Ac.-Ft. | Tap Fees Revenue \$ | Water Sales Revenue \$ |
|------|--------------------|----------|--------------------|---------------------------|--------------------------------|---------------------|------------------------|
| 2000 | 3,606              | -        | 1,684              | -                         | -                              | -                   | -                      |
| 2001 | 3,639              | 0.92%    | 1,609              | -                         | -                              | -                   | -                      |
| 2002 | 3,681              | 1.15%    | 1,611              | -                         | -                              | -                   | -                      |
| 2003 | 3,729              | 1.30%    | 1,487              | -                         | -                              | -                   | -                      |
| 2004 | 3,753              | 0.64%    | 1,383              | -                         | -                              | -                   | -                      |
| 2005 | 3,786              | 0.88%    | 1,549              | -                         | -                              | -                   | -                      |
| 2006 | 3,810              | 0.63%    | 1,559              | -                         | -                              | -                   | -                      |
| 2007 | 3,835              | 0.66%    | 1,499              | -                         | -                              | 242,086.00          | 1,377,021.00           |
| 2008 | 3,873              | 1.00%    | 1,608              | -                         | -                              | 207,851.80          | 1,387,277.00           |
| 2009 | 3,912              | 1.00%    | 1,687              | -                         | -                              | 207,729.68          | 1,470,821.00           |
| 2010 | 3,951              | 1.00%    | 1,767              | 13.5                      | 1,753                          | 261,690.00          | 1,550,796.38           |
| 2011 | 3,991              | 1.00%    | 1,847              | 27.0                      | 1,820                          | 268,400.00          | 1,609,591.66           |
| 2012 | 4,031              | 1.00%    | 1,926              | 40.5                      | 1,885                          | 268,400.00          | 1,667,511.38           |
| 2013 | 4,071              | 1.00%    | 1,945              | 54.1                      | 1,891                          | 268,400.00          | 1,672,366.77           |
| 2014 | 4,112              | 1.00%    | 1,964              | 67.6                      | 1,896                          | 275,110.00          | 1,677,222.16           |
| 2015 | 4,153              | 1.00%    | 1,984              | 81.1                      | 1,903                          | 275,110.00          | 1,682,953.10           |
| 2016 | 4,194              | 1.00%    | 2,004              | 94.6                      | 1,909                          | 275,110.00          | 1,688,692.90           |
| 2017 | 4,236              | 1.00%    | 2,022              | 108.1                     | 1,914                          | 281,820.00          | 1,692,663.88           |
| 2018 | 4,279              | 1.00%    | 2,043              | 121.6                     | 1,921                          | 288,530.00          | 1,699,279.23           |
| 2019 | 4,321              | 1.00%    | 2,064              | 135.1                     | 1,929                          | 281,820.00          | 1,705,903.43           |
| 2020 | 4,363              | 1.00%    | 2,085              | 139.4                     | 1,946                          | 281,820.00          | 1,720,743.76           |
| 2021 | 4,406              | 1.00%    | 2,106              | 143.6                     | 1,962                          | 288,530.00          | 1,735,575.24           |
| 2022 | 4,450              | 1.00%    | 2,127              | 147.8                     | 1,979                          | 295,240.00          | 1,750,406.72           |
| 2023 | 4,495              | 1.00%    | 2,147              | 152.0                     | 1,995                          | 301,950.00          | 1,764,362.64           |
| 2024 | 4,540              | 1.00%    | 2,169              | 156.3                     | 2,013                          | 301,950.00          | 1,780,078.53           |
| 2025 | 4,585              | 1.00%    | 2,189              | 160.5                     | 2,029                          | 301,950.00          | 1,794,034.45           |
| 2026 | 4,631              | 1.00%    | 2,210              | 164.7                     | 2,045                          | 308,660.00          | 1,808,865.93           |
| 2027 | 4,677              | 1.00%    | 2,231              | 168.9                     | 2,062                          | 308,660.00          | 1,823,706.26           |



| Year | # Taps Commercial | Growth % | Comm. Usage Ac.-Ft. | Projected Savings Ac.-Ft. | Revised Usage Forecast Ac.-Ft. | Tap Fees Revenue \$ | Water Sales Revenue \$ |
|------|-------------------|----------|---------------------|---------------------------|--------------------------------|---------------------|------------------------|
| 2000 | 161               | -        | 362                 | -                         | -                              | -                   | -                      |
| 2001 | 163               | 1.24%    | 267                 | -                         | -                              | -                   | -                      |
| 2002 | 165               | 1.23%    | 209                 | -                         | -                              | -                   | -                      |
| 2003 | 167               | 1.21%    | 250                 | -                         | -                              | -                   | -                      |
| 2004 | 169               | 1.20%    | 208                 | -                         | -                              | -                   | -                      |
| 2005 | 171               | 1.18%    | 259                 | -                         | -                              | -                   | -                      |
| 2006 | 177               | 3.51%    | 242                 | -                         | -                              | -                   | -                      |
| 2007 | 182               | 2.82%    | 177                 | -                         | -                              | 33,550.00           | 207,210.00             |
| 2008 | 184               | 1.00%    | 247                 | -                         | -                              | 13,420.00           | 208,669.00             |
| 2009 | 186               | 1.00%    | 265                 | -                         | -                              | 13,420.00           | 221,190.00             |
| 2010 | 188               | 1.00%    | 282                 | 2.0                       | 280                            | 13,420.00           | 247,607.04             |
| 2011 | 190               | 1.00%    | 299                 | 4.1                       | 295                            | 13,420.00           | 260,837.74             |
| 2012 | 192               | 1.00%    | 317                 | 6.1                       | 311                            | 13,420.00           | 274,961.70             |
| 2013 | 194               | 1.00%    | 321                 | 8.1                       | 313                            | 13,420.00           | 276,703.98             |
| 2014 | 196               | 1.00%    | 325                 | 10.2                      | 315                            | 13,420.00           | 278,446.26             |
| 2015 | 198               | 1.00%    | 329                 | 12.2                      | 317                            | 13,420.00           | 280,179.69             |
| 2016 | 200               | 1.00%    | 333                 | 14.2                      | 319                            | 13,420.00           | 281,921.97             |
| 2017 | 202               | 1.00%    | 337                 | 16.3                      | 321                            | 13,420.00           | 283,664.25             |
| 2018 | 204               | 1.00%    | 342                 | 18.3                      | 324                            | 13,420.00           | 286,290.94             |
| 2019 | 206               | 1.00%    | 346                 | 20.3                      | 326                            | 13,420.00           | 288,024.37             |
| 2020 | 208               | 1.00%    | 351                 | 21.0                      | 330                            | 13,420.00           | 291,889.22             |
| 2021 | 210               | 1.00%    | 355                 | 21.6                      | 333                            | 13,420.00           | 294,860.83             |
| 2022 | 212               | 1.00%    | 360                 | 22.2                      | 338                            | 13,420.00           | 298,725.68             |
| 2023 | 214               | 1.00%    | 365                 | 22.9                      | 342                            | 13,420.00           | 302,581.69             |
| 2024 | 216               | 1.00%    | 369                 | 23.5                      | 346                            | 13,420.00           | 305,562.13             |
| 2025 | 218               | 1.00%    | 374                 | 24.1                      | 350                            | 13,420.00           | 309,418.14             |
| 2026 | 220               | 1.00%    | 378                 | 24.8                      | 353                            | 13,420.00           | 312,398.59             |
| 2027 | 222               | 1.00%    | 383                 | 25.4                      | 358                            | 13,420.00           | 316,254.60             |



| Year | # Taps Institutional | Growth % | Inst. Usage Ac.-Ft. | Projected Savings Ac.-Ft. | Revised Usage Forecast Ac.-Ft. | Tap Fees Revenue \$ | Water Sales Revenue \$ |
|------|----------------------|----------|---------------------|---------------------------|--------------------------------|---------------------|------------------------|
| 2001 | 8                    | -        | 95                  | -                         | -                              | -                   | -                      |
| 2002 | 8                    | 0.00%    | 88                  | -                         | -                              | -                   | -                      |
| 2003 | 8                    | 0.00%    | 86                  | -                         | -                              | -                   | -                      |
| 2004 | 8                    | 0.00%    | 110                 | -                         | -                              | -                   | -                      |
| 2005 | 8                    | 0.00%    | 102                 | -                         | -                              | -                   | -                      |
| 2006 | 8                    | 0.00%    | 116                 | -                         | -                              | -                   | -                      |
| 2007 | 8                    | 0.00%    | 115                 | -                         | -                              | 0.00                | 92,123.00              |
| 2008 | 8                    | 0.00%    | 102                 | -                         | -                              | 0.00                | 92,809.00              |
| 2009 | 8                    | 0.00%    | 102                 | -                         | -                              | 0.00                | 98,378.00              |
| 2010 | 8                    | 0.00%    | 102                 | 0.9                       | 101                            | 0.00                | 89,412.84              |
| 2011 | 8                    | 0.00%    | 102                 | 1.8                       | 100                            | 0.00                | 88,608.04              |
| 2012 | 8                    | 0.00%    | 102                 | 2.7                       | 99                             | 0.00                | 87,812.08              |
| 2013 | 8                    | 0.00%    | 102                 | 3.6                       | 98                             | 0.00                | 87,016.12              |
| 2014 | 8                    | 0.00%    | 102                 | 4.5                       | 97                             | 0.00                | 86,211.31              |
| 2015 | 8                    | 0.00%    | 102                 | 5.4                       | 97                             | 0.00                | 85,415.35              |
| 2016 | 8                    | 0.00%    | 102                 | 6.3                       | 96                             | 0.00                | 84,619.39              |
| 2017 | 8                    | 0.00%    | 102                 | 7.2                       | 95                             | 0.00                | 83,814.59              |
| 2018 | 8                    | 0.00%    | 102                 | 8.1                       | 94                             | 0.00                | 83,018.63              |
| 2019 | 8                    | 0.00%    | 102                 | 9.0                       | 93                             | 0.00                | 82,222.67              |
| 2020 | 8                    | 0.00%    | 102                 | 9.3                       | 93                             | 0.00                | 81,975.04              |
| 2021 | 8                    | 0.00%    | 102                 | 9.6                       | 92                             | 0.00                | 81,718.56              |
| 2022 | 8                    | 0.00%    | 102                 | 9.9                       | 92                             | 0.00                | 81,470.93              |
| 2023 | 8                    | 0.00%    | 102                 | 10.2                      | 92                             | 0.00                | 81,223.30              |
| 2024 | 8                    | 0.00%    | 102                 | 10.4                      | 92                             | 0.00                | 80,975.66              |
| 2025 | 8                    | 0.00%    | 102                 | 10.7                      | 91                             | 0.00                | 80,719.19              |
| 2026 | 8                    | 0.00%    | 102                 | 11.0                      | 91                             | 0.00                | 80,471.56              |
| 2027 | 8                    | 0.00%    | 102                 | 11.3                      | 91                             | 0.00                | 80,223.92              |

From Table 7-4, it appears that the increased revenue from growth will outpace the loss of revenue from the Conservation Measures and Programs, if implemented according to the plan. The only loss in revenue is in the Institutional Sector. This is because there are no new schools anticipated within the planning time frame.