2012 Integrated Resource Plan
# Table of Contents

I. Executive Summary ........................................................................................................ 1  
II. Recent Trends in Electrical Load Growth ................................................................. 4  
III. System Load Forecast ............................................................................................... 7  
IV. Current Resources ..................................................................................................... 12  
V. Load/Resource Balance and Resource Needs ............................................................ 16  
VI. Renewable Energy .................................................................................................... 21  
VII. Demand Side Management ....................................................................................... 27  
VIII. Environmental Management .................................................................................. 40  
IX. Recommended Actions ............................................................................................. 44  
X. Public Participation ..................................................................................................... 46
I. Executive Summary

Platte River Power Authority (Platte River), in coordination with its owner municipalities (Estes Park, Fort Collins, Longmont and Loveland), has prepared this Integrated Resource Plan (IRP). The IRP focuses primarily on the five-year planning period from 2012 to 2016, though it also includes consideration of longer term planning issues.

An IRP typically provides information associated with resource acquisitions to meet customers’ future electrical energy needs, including capacity and energy supply resources, renewable energy and demand side management. It is important to note that based on the current load forecast and other factors, no new firm generation resources are required to meet the municipalities’ electricity needs during the term of this IRP. The next firm capacity resource may not be needed until about 2020. However, demand side management and renewable energy sources are anticipated to increase during the term of this IRP.

The intent of this document is to provide updated information on predicted electric loads, existing resources, renewable energy planning, and demand side management programs. It also provides planning criteria for addition of new capacity resources over the longer term. Resource planning is a continuous and dynamic process, and this IRP represents a view of conditions as they stand at a narrow window in time. Many of the issues and assumptions presented here will change as customers’ needs and other factors evolve over time.

The electricity requirements of the municipalities continue to grow, though at a slower rate than historical levels due to recent economic conditions, slower population growth, and energy efficiency efforts. While the municipalities’ populations grew at an average rate of 2.75 percent between 1991 and 2009, growth of about 1.8 percent is anticipated between 2011 and 2030. Growth in local business is also anticipated to be slower than historical levels. The combined municipal growth in electrical energy requirements over the next ten years is estimated to be approximately 1.9 percent annually, with peak demand growth at about 2.3 percent per year. Details of the most recent ten-year system load forecast are included as part of this IRP.

Platte River’s existing resource portfolio includes a mix of hydropower (via federal contracts), coal-fired generation (located at Rawhide and Craig stations), and natural gas turbines (five units at the Rawhide site). Platte River also receives energy from wind turbines located at the Medicine Bow and Silver Sage sites in Southeast Wyoming. In the unlikely event that the Rawhide coal unit goes down unexpectedly at time of peak, Platte River has additional options for obtaining temporary capacity on a short-term basis. Detailed loads and resource balance projections are provided in Section V of this document.

Several uncertainties could change the load/resource balance within the next few years. These include the potential for expanded use of distributed generation and “smart grid” technologies, new business facilities locating within the municipalities, uncertainty in weather trends, expansion of end-use technologies (air conditioning, computers, home entertainment, communications, electric vehicles,
etc.), potential annexations by the municipalities, unexpected changes in population and expansion of energy efficiency technologies and programs.

Since the late 1970s, the owner municipalities and Platte River have undertaken numerous projects to provide efficient generation, transmission, and distribution—and have offered a variety of programs to encourage efficient use of energy. Since 2002, a set of Common Programs has been offered by Platte River in all the municipalities. Each municipality also operates unique programs in their individual communities. Details of existing programs, as well as anticipated future programs are provided in this IRP.

A Board approved Renewable Energy Supply Policy is used to guide planning and acquisition of new renewable sources to meet the needs of the municipalities. The policy provides direction regarding the level of renewable sources to be obtained, the type of sources considered acceptable, the anticipated effect of renewable sources on future resource planning, and the approach to be used for pricing renewable sources for sale to the owner municipalities. By 2020, it is anticipated that approximately 220,000 MWh/yr of renewable energy will be needed from sources other than federal hydropower. This represents about 6.5 percent of total predicted energy supply to the municipalities in 2020. The combined renewable portion of supply including hydropower is expected to be about 16 percent by 2020.

Platte River and the municipalities plan to implement the following items as a result of this IRP:

1. **Continue operating demand side management programs** – Platte River funding for Common Programs (those offered in all four municipalities) will be approximately the same as current levels (about $2 million annually) while funding from the municipalities is anticipated to increase significantly relative to historical levels. Verifiable peak demand and energy savings will be integrated into the overall system load forecast by 2013.

2. **Continue implementation of the Renewable Energy Supply Policy** – anticipating the need for new renewable energy resources in approximately 2015. The process for seeking new renewable supply options is expected to begin in 2012. About 45,000 MWh/yr of new supply is anticipated by 2015—roughly one-third more than historical deliveries from existing sources.

3. **Update system resource planning criteria** – to remove the risk of relying on real-time market purchases to meet load obligations whenever the Rawhide coal unit is out of service. Rather than planning on up to 65 MW in real-time market purchases, only pre-arranged purchase options and other firm resources will be considered for firm capacity needs.

4. **Monitor developments of new regional generation and transmission resources** – to ensure a position in new options that may be of benefit to Platte River and the municipalities over the long term.

5. **Monitor other developments** – in municipal loads, technology development, wholesale electricity markets and regulation/legislation—in order to support contingency planning.

A draft of this IRP was shared with the public and interested parties. Several meetings were held with community groups and a public hearing was conducted. Details of the public information process are provided in this report.
This 2012 Integrated Resource Plan was approved by resolution of the Platte River Board of Directors in May 2011. It was also submitted to the Western Area Power Administration (WAPA), in accordance with the directives of the Energy Policy Act. Updates will be provided to WAPA on an annual basis.
II. Recent Trends in Electrical Load Growth

The municipalities served by Platte River have seen slower growth in business activity, population, and demand for electricity over the past few years—relative to the prior ten years. Figure 1 shows the overall trends in energy and peak demand on the Platte River system since 2001 and Figure 2 breaks out the energy usage, peak demand and ten-year population growth rates by municipality.

Figure 1

Historical Growth Trends

![Graph showing historical growth trends]  
- 22% population increase  
- 32% peak demand increase  
- 20% energy increase

Figure 2

<table>
<thead>
<tr>
<th>Cities</th>
<th>2000 Energy Requirements (MWh)</th>
<th>2010 Energy Requirements (MWh)</th>
<th>2000-2010 Energy Growth</th>
<th>2000-2010 Annual Demand Growth</th>
<th>10 Year Population Growth*</th>
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</thead>
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<tr>
<td>Estes Park</td>
<td>116,523</td>
<td>129,840</td>
<td>11%</td>
<td>12%</td>
<td>21%</td>
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<tr>
<td>Fort Collins</td>
<td>1,253,917</td>
<td>1,472,941</td>
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<td>27%</td>
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<tr>
<td>Longmont</td>
<td>694,019</td>
<td>806,534</td>
<td>16%</td>
<td>30%</td>
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<tr>
<td>Loveland</td>
<td>522,889</td>
<td>702,481</td>
<td>34%</td>
<td>50%</td>
<td>31%</td>
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<tr>
<td>Aggregate</td>
<td>2,587,348</td>
<td>3,111,796</td>
<td>20%</td>
<td>32%</td>
<td>22%</td>
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</tbody>
</table>


Figure 3 presents the historical and projected growth for annual energy, billable peaks, and annual peak demand. Billable peaks represent the sum of all monthly peak demands for the year. Since 1997, Platte River’s annual maximum system peak has occurred during the summer season. In the period 2001 to 2005, municipal loads grew at a fairly steady rate. The second half of the decade was more volatile. In 2010, the annual peak demand was 0.1 percent below the 2005 peak. Since the system peak of 618 MW
in 2005, annual peak demand has been as high as 635 MW in 2007, and as low as 576 MW in 2009. Annual energy and billable peak growth rates were more consistent than annual peak demand, but both grew less than one percent annually between 2005 and 2010.

**Figure 3**

<table>
<thead>
<tr>
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<td>-3.3%</td>
<td>1.9%</td>
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<td>2009</td>
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<td>1.2%</td>
<td>5,763</td>
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<td>1.1%</td>
<td>576</td>
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<td>1.1%</td>
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<td>2.0%</td>
<td>695</td>
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<td>1.9%</td>
<td>6,608</td>
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<td>2.0%</td>
<td>711</td>
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<td>1.8%</td>
<td>1.9%</td>
<td>6,730</td>
<td>1.9%</td>
<td>2.0%</td>
<td>726</td>
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<td>2018</td>
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<td>1.7%</td>
<td>1.8%</td>
<td>6,852</td>
<td>1.8%</td>
<td>1.9%</td>
<td>741</td>
<td>2.1%</td>
<td>2.2%</td>
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<td>2019</td>
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<td>1.8%</td>
<td>6,973</td>
<td>1.8%</td>
<td>1.9%</td>
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<td>2020</td>
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<td>1.8%</td>
<td>7,122</td>
<td>2.1%</td>
<td>1.9%</td>
<td>775</td>
<td>2.4%</td>
<td>2.2%</td>
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</tbody>
</table>

*For 2010, January - August actuals reported, September - December reflect 2010 Official Budget figures*

In the 2002 IRP, the annual peak load for 2011 was projected to be 705 MW and in the 2007 IRP, the 2011 peak was projected as 714 MW. Load growth slowed significantly since the financial crisis occurred in 2008 and the peak load for 2011 is now anticipated to be about 632 MW.

Figure 4 shows the annual load duration curves from 2000 and 2010. These curves present the municipal loads from highest to lowest within a given year. Over this period, the peak load demands during relatively few hours on summer peak days have grown 32 percent, while demands during the rest of the year have grown at a slower rate of 22 percent.

Figure 5 illustrates the annual peak-day load profile for 2000, 2005, and 2010. Between 2000 and 2005, annual peak loads grew 154 MW and total peak-day energy consumption increased 2,554 MWh. The peak growth slowed significantly over the next five-year period with a 12 MW increase in 2010 compared to 2005 and a 110 MWh decrease in peak-day energy consumption.
Figure 4

Annual Loads

City Load - MW

1 877 1753 2629 3505 4381 5257 6133 7009 7885

Hours

2000
2010

32% Increase
22% Increase

Figure 5

Annual Peak Day Load Profile

Demand - MW

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Hour

2000
2005
2010

32% Increase
22% Increase
III. System Load Forecast

Methodology
Platte River uses an econometric model to develop long-term demand and energy forecasts. Econometric modeling uses forecasts of multiple independent variables to project the growth of a dependent variable. The econometric model uses independent variable projections including population, weather, and employment, to project demand and energy growth in the municipalities. Demand and energy are forecasted separately.

Woods & Poole (W&P), an independent economic forecasting firm, provided population and employment forecasts. W&P’s employment and population forecasts for Larimer and Boulder counties continue to show declines relative to historical growth rates. While the owner municipalities’ populations grew at an annual average rate of 2.75 percent between 1991 and 2009, W&P projects average annual population growth of 1.8 percent between 2011 and 2030. Past population data for the four municipalities, provided by the Colorado Economic and Demographic Information System, is used for the historical population base.

To forecast the independent weather variables used in peak demand projections, average weather conditions between 1991 and 2010 were applied. While this long-term average should reflect “normal” weather conditions, weather variables in any given year may be higher or lower than the historical average. Weather data used in the model is from Day Weather, Inc., which provides daily meteorological data specific to the City of Fort Collins. Weather statistics used to forecast demand include Cooling Degree Days on Peak Day (CDD) for summer cooling season peaks, and Heating Degree Days on Peak Day (HDD) in winter season heating months. CDD and HDD were selected as the independent weather variables based on past recommendations by Utility Financial Solutions, a consulting firm that assisted with the development of past Official Load Forecasts.

In 2010, Platte River continued to experience deviation from forecasted loads. The deviation may be attributed to multiple factors: weather variations from historical trends, demand side management programs in the municipalities and continued impacts of the recent financial crisis among other factors. Although economic variables are used in the econometric model, they are lagging indicators. Due to this lagging effect and the fact that the recent economic downturn was so severe, the forecasting methodology for 2011 has been modified. To forecast 2011, the econometric model long-term growth projections were applied to 2009 and 2010 actual loads. In 2012 and beyond, the growth rates from the econometric model projections were used to determine the forecast.

As demand side management (DSM) programs continue to evolve and grow, their impacts upon the municipalities’ loads have also grown. Common Programs, those operated by Platte River in all the municipalities, are focused on energy efficiency and do not include Direct Control Load Management as defined by North American Electric Reliability Corporation (NERC). To account for the resulting impacts of DSM programs on forecasts, the Official Forecast incorporates DSM savings. DSM savings are included for Common Programs that are measured and verified by Platte River. In the future, verifiable savings from DSM programs operated by the municipalities will also be included.
Ten-Year Municipal Load Forecast

Platte River and the owner Municipalities typically produce ten-year forecasts for electricity needs. Longer-term forecasts are also developed, but given its relatively small size and simple resource mix, a ten-year forecast provides ample time for resource planning on Platte River’s system, particularly if the forecast is updated annually.

The following are highlights of the 2011 Ten-Year System Load Forecast:

- Average annual energy growth rate is estimated as 1.9 percent for the 2011 to 2020 period.
- The ten-year billable peaks growth is approximately 125 MW per year, with an average annual growth rate of 1.9 percent between 2011 and 2020.
- The ten-year annual peak demand growth is approximately 16 MW per year, with an average annual growth rate of 2.3 percent between 2011 and 2020.

Figure 3 details the most recent ten-year projected annual peak demand forecast for the aggregate of the municipalities’ loads. The data is taken from the 2011 Official Load Forecast. As indicated in the figure, the five-year average growth rate for annual peak demand is projected to increase from 0.9 percent in 2010 to 1.9 percent in 2015.

Figures 6 and 7 depict historical and forecasted demand and energy for 2001 through 2020, along with the high and low forecast intervals. The low population forecast assumes a 1.1 percent annual population growth rate from 2011 to 2020. The high population forecast assumes a 2.75 percent annual population growth rate over the same period.

Figure 6

Annual Peak Demand - Historical & Forecasted
Figure 7 depicts historical and projected annual energy from 2001 through 2020, along with the high and low forecast intervals. Like the annual peak demand forecast, the low and high forecasts assume 1.1 percent and 2.75 percent population growth rates, respectively.

**Figure 7**

![Annual Energy - Historical & Forecasted](image)

**Factors Affecting Load Growth**

A number of factors introduce uncertainty into load projections for the Platte River system. Several of these are discussed here.

**Annexations and Urban Growth Boundaries**

Each of the municipalities has its own policies that guide decision-making processes for annexation and changes to urban growth boundaries. Urban growth boundaries define the limits for a municipality's future footprint of homes and businesses upon the landscape, which impacts electricity consumption. New construction outside the urban growth areas will typically fall under the county's jurisdiction, not that of the municipality. In the future, new developments outside of urban growth boundaries could be proposed, accompanied by requests for annexation into the adjacent municipality. Depending upon the size and number of such projects, growth outside the urban growth boundaries of the municipalities may have significant impact on the municipalities' future load growth. Annexations of existing loads may also occur and these could increase loads beyond the forecasted level. Platte River and the municipalities will monitor this issue.

**New Energy Intensive Loads**

Advances in computing technology and the need for secure data have led to expansion of web and data server installations. These large installations can increase peak loads by over 50 MW within a few years. New large facilities supporting clean energy and other new technologies may also choose to locate in this area. Given the owner municipalities' historically low and stable electric rates (and other attractive characteristics), entities with large loads (5 MW to 50 MW) have considered locating within the
members’ service areas in the past. The assumptions supporting the current load forecast do not include new large energy intensive loads. Platte River and the cities continue to monitor this issue.

Local and National Economic Conditions

The population forecast used to develop our electric energy forecasts predicts a significant decline in population growth rates relative to historical rates. Between 1991 and 2004, population growth averaged 3.0 percent for the region. For forecasting future energy and demand requirements, Platte River used the Woods & Poole forecast, which averages 1.7 percent annual population growth. The actual rate of population growth and strength of economic conditions in the region will impact future demand and energy growth rates.

Restructuring/Market Trends

Events over the last several years in California and other regions have significantly diminished the momentum behind electric industry restructuring (particularly at the retail level). The current regulatory and legislative environment leaves the timing of restructuring in Colorado uncertain, but it is unlikely that retail competition will be implemented for the next several years. Changes in municipal loads that may occur due to industry restructuring are not included in the current forecast.

Distributed Technology Advancements

Technologies such as fuel cells, micro-turbines, photovoltaic solar and demand response have garnered a great deal of interest in recent years. These technologies appeal to some retail customers since they can be installed near the point of energy use (i.e., distributed) and can generate energy more efficiently from fossil fuels. They can also provide generation from renewable sources (solar, biofuel, etc.). To date, the relatively high cost of these sources has limited their widespread installation, but technology advancements and various types of incentives have brought prices down to levels that are acceptable to some customers, particularly those willing to pay a premium for renewable energy.

As the cost of distributed technologies continues to drop, some of the load in the municipalities may be affected in future years. The extent of the impact depends on the rate of acceptance of these technologies and on the degree to which the municipalities and Platte River participate in their implementation. Participation in distributed technologies will depend on a variety of factors, including the cost of distributed renewables compared to central generation (renewable or otherwise), available incentives, and customer interest. Platte River and the municipalities will continue to monitor ongoing developments in distributed technologies to understand the benefits, costs, and risks of implementing these technologies as they mature.

Electric Vehicles

Though the short-term impact of electric vehicles on municipal loads is likely to be small, there could be significant impacts over the long-term. These impacts may be more significant for the municipalities’ distribution
equipment, depending on charging capacity requirements and existing infrastructure. If electric vehicles are charged during off-peak periods, the timing of new system-level capacity resources may not be significantly impacted for many years. However, if charging occurs during periods of high loads, planning for new capacity resources may be affected within the next ten years. Smart Grid and other technologies may mitigate the impact of electric vehicles on distribution and system level loads. Developments in electric transportation technologies and market acceptance of these alternatives will be monitored over time and load forecasts will be adjusted as more information is available.

**New Electric Rates**

The structure of electricity rates and pricing levels can impact customer behavior and therefore affect the system load forecast. Retail rates that differentiate pricing based on season or time-of-day can lead to lower demand at times of higher price. Tiered rates, which apply increased prices for higher levels of usage, can reduce overall energy consumption. Existing rates are based on simple demand and energy charges, but in the future, new pricing structures may be implemented at the retail level.

The Platte River Board has directed that a new seasonal rate be considered at the wholesale level. This new rate may be passed through to some retail customers in the future. The new rate provides for increased energy charges and lower peak demand charges relative to the historical wholesale rate. The rate also includes higher charges in the summer season (June through August) due to higher costs during this period.

The Municipalities may also have rate objectives that lead to new retail rates in the future—and these rates may influence customer behavior and loads. Such objectives may include encouraging efficiency and conservation, reducing greenhouse gas emissions and delaying capital costs for the electric distribution system.

The Municipalities and Platte River will continue to communicate and coordinate regarding new rate structures in the future—and to share information regarding potential changes in peak demand and energy loads that may be associated with changes in rates.

*A copy of the most recent load forecast report is available upon request.*
IV. Current Resources

To fulfill its mission, Platte River has developed and contracted for a diversified mix of reliable, cost-effective, and environmentally responsible resources. An overview of each of Platte River’s current resources is provided below.

Rawhide Energy Station

The Rawhide Energy Station consists of Rawhide Unit 101, a 280 MW (net capacity) coal-fired generating facility, with cooling reservoir, coal-handling facilities, emissions control equipment, and related transmission facilities. Rawhide Unit 101 commenced commercial operation on March 31, 1984. The station is located approximately 20 miles north of Fort Collins and is connected to Platte River’s system by two double circuit 230 kV transmission lines. The site also includes five gas-fired combustion turbines, Rawhide Units A, B, C, D and F (these units are discussed in further detail below).

At inception in 1984, Rawhide Unit 101 was equipped with the best available emissions control technology, and several emissions control upgrades have occurred over time. Further NO\textsubscript{X} reductions are also anticipated within the next five years. Rawhide Unit 101 is one of the lowest emitting coal plants in the U.S. for SO\textsubscript{2} and NO\textsubscript{X}, as shown in Figures 8 and 9. Emissions of CO\textsubscript{2} and other greenhouse gases are discussed in Platte River’s Climate Action Plan, referenced in Section VIII. Additional details of U.S. electric utility industry emissions can be accessed at the Environmental Protection Agency’s Data and Maps site: [http://camddataandmaps.epa.gov/gdm/](http://camddataandmaps.epa.gov/gdm/)

Yampa Project (Craig Units 1 and 2)

The Yampa Project consists of Craig Units 1 and 2, both of which are coal-fired—each rated at 428 MW (net capacity). Platte River owns an 18 percent share of Units 1 and 2, or 77 MW per unit, for a total of 154 MW. The Yampa Project is located in northwestern Colorado, approximately four miles southwest of Craig. The site includes the generation facilities, coal handling facility, small water storage reservoir, and related transmission facilities. A $120 million Yampa Environmental Project was completed in 2004, which reduced SO\textsubscript{2}, NO\textsubscript{X}, and particulate emissions from the plant. Craig Units 1 and 2 have relatively low emissions relative to other coal-fired plants throughout the U.S., as indicated in Figures 8 and 9. Further NO\textsubscript{X} reductions are also anticipated at the Craig Units within the next five years. Emissions of CO\textsubscript{2} and other greenhouse gases are discussed in Platte River’s Climate Action Plan, referenced in Section VIII.

Platte River also owns approximately 190 MW of transmission capacity in the path from western to eastern Colorado, which is used to deliver Platte River’s share of the Yampa Project output. The excess transmission capacity above what is needed by Platte River is leased on a long-term basis to other regional utilities.
Figure 8

2009 SO2 Emission Rates
All Reporting U.S. Coal-Fired Plants

Yampa  Rawhide

Figure 9

2009 NOx Emission Rates
All Reporting U.S. Coal-Fired Plants

Rawhide  Yampa

Source: U.S. Environmental Protection Agency
Western Area Power Administration Supply Contracts

Platte River receives allocations of federal hydropower under contracts from the Western Area Power Administration’s (WAPA) Loveland Area Project (LAP) and the Colorado River Storage Project (CRSP). These allocations vary by season.

The LAP contract was extended in March 1996 to run through September 2024. Platte River receives monthly quantities of approximately 30 MW to 34 MW of LAP capacity throughout the year.

Platte River’s guaranteed capacity from CRSP was reduced on March 1, 1997, as part of Amendment No. 4 to the CRSP agreement. This reduced capacity is referred to as Sustainable Hydropower (SHP). For long-range resource planning, Platte River uses the SHP quantity as the capacity expected to be available from CRSP. Platte River expects to receive approximately 55 MW to 62 MW of CRSP capacity during the summer season and 75 MW to 85 MW of CRSP capacity during the winter season.

The final element of the CRSP supply is based upon the capacity difference between contract-rate-of-delivery and Sustainable Hydropower quantities. This difference is referred to as Western Replacement Power (WRP) and represents capacity (and associated energy) that Platte River may be able to schedule from WAPA, depending on availability.

Peaking Units

Platte River operates five natural gas fired combustion turbines (Rawhide Units A, B, C, D and F). These units provide peaking capacity as well as backup reserve capacity in the event of an outage at one of Platte River’s other resources. Three of these units were commercially available for generation in 2002, the fourth was brought on line in the spring of 2004, and the last unit came on line in 2008. The combined capacity of the units provides approximately 388 MW.

A 15-mile natural gas pipeline was constructed to supply fuel to the units. The pipeline has capacity to supply additional gas-fired resources and/or to operate the existing units in combined cycle mode. Any consideration of new gas resources or operational changes for existing gas resources would require a detailed study of natural gas supply to the Rawhide site.

Forced Outage Assistance Agreement

An agreement has been executed with Tri-State Generation and Transmission Association, whereby 100 MW of capacity is provided to Platte River in the event of an outage at Rawhide Unit 101. In exchange for this capacity provision, Platte River provides 100 MW of capacity to Tri-State in the event of an outage at Craig Unit 3.
Wind Generation

Platte River also has about 20 MW of wind generation from two sources in Wyoming. These are described in the Renewable Energy section.

Resource Operations and Integration

Platte River optimizes operation of its resources to minimize costs to the municipalities and to ensure reliability and efficiency. The coal units (Rawhide and Craig units 1 & 2) are operated at near full output for most of the time. All three coal units are projected to operate at a 90 percent capacity factor unless scheduled maintenance work is planned on the units. These units provide the bulk of electrical power and energy to the municipalities and also are used to support surplus sales to other regional wholesale entities. WAPA hydropower resources must be scheduled well in advance and are scheduled similar to the baseload units, though the energy available is limited so the average capacity factor from these resources is lower. All of the hydropower is delivered to the municipalities. Gas peaking units operate very little, as they are used for serving summer peaks and for providing capacity in the event that other resources are unavailable. Purchases are made from the regional wholesale market if prices for such purchases are lower than the cost of operating the gas units. The amount of these purchases is typically very small.

Platte River’s total energy resources for 2011 are estimated at 4,088 GWh. About 78 percent of this energy is delivered to the municipalities. The bulk of the remaining amount (21 percent) is sold into the surplus market and the remaining one percent of the energy is used to cover system losses. Surplus sales help reduce revenues required from the municipalities (and associated rates). A summary of operating characteristics for Platte River’s resources is provided in the table below.

<table>
<thead>
<tr>
<th>Resource</th>
<th>Size (MW)</th>
<th>Energy Supplied (GWh)</th>
<th>Capacity Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rawhide coal</td>
<td>280</td>
<td>2,204</td>
<td>90%</td>
</tr>
<tr>
<td>Craig units 1&amp;2</td>
<td>154</td>
<td>1,160</td>
<td>86%</td>
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<tr>
<td>Gas peaking</td>
<td>388</td>
<td>37</td>
<td>1%</td>
</tr>
<tr>
<td>Hydropower</td>
<td>90</td>
<td>613</td>
<td>45%</td>
</tr>
<tr>
<td>Purchases</td>
<td>N/A</td>
<td>11</td>
<td>N/A</td>
</tr>
<tr>
<td>Wind</td>
<td>20</td>
<td>63</td>
<td>35%</td>
</tr>
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</table>

The price of generation from natural gas units is currently more than four times higher than the cost of coal generation, so minimizing operation of the natural gas units helps manage overall costs. During the term of this IRP (through 2016), both gas and coal prices are anticipated to increase by about 30 percent relative to prices budgeted for 2011. This estimate does not account for potential cost increases due to charges related to emissions of CO$_2$ and other greenhouse gases. The impact of such charges would be about twice as high for coal as for natural gas (assuming current generation technologies).
V. Load/Resource Balance and Resource Needs

In this section, we summarize the predicted balance between Platte River system loads and existing resources—and discuss the potential need for new resources in the future. The decision to add a new resource is based on ensuring an adequate balance between loads and resources at all times—particularly under the scenario that the largest resource (Rawhide Unit 101) goes off line unexpectedly at time of summer system peak.

Resource Addition Criteria

In the last Integrated Resource Plan (2007), the following criteria were used for determining the timing of new firm generation resources:

- Ensure that loads do not exceed firm resources by more than 65 MW in the event of an unplanned outage of Rawhide Unit 101 (coal unit)
- Maintain a minimum planning reserve margin of 15 percent
- Ensure loss of load probability (LOLP) of less than five percent at the peak hour
- Ensure loss of load expectation (LOLE) of less than one day in ten years

The first criterion assumes that firm capacity can be purchased from the wholesale market on short-term (real time) notice—at any time during the year. The most critical period for such purchase would be at the time of summer system peak with the Rawhide coal unit out of service. This was a reasonable assumption in the past, but experience during the last few summer seasons has shown decreased availability of wholesale power on a real-time basis during peak periods.

The second criterion of maintaining a planning reserve margin of 15 percent with all generation units operating represents typical practice for electric utilities in the region. In the future, standards may be set by Western Electricity Coordinating Council (WECC), North American Electric Reliability Corporation (NERC) or Federal Energy Regulatory Commission (FERC), which could require higher levels of planning reserve. Platte River will continue to monitor such developments over time, but for now, a 15 percent planning reserve is used.

The LOLP and LOLE criteria are more appropriate to support statistical analysis for entities with a large number of generation resources. These criteria may continue to be used in the future to help guide planning, but have limited applicability for Platte River’s relatively small system and associated resources.

Beginning in 2012, it is recommended that the following criteria be used for future resource planning:

- Carry reserves or have access to firm capacity that is sufficient to meet load obligations whenever the Rawhide coal unit is out of service
- Maintain a minimum planning reserve margin of 15 percent

These new criteria mitigate the risk that resources are insufficient to meet loads if capacity is unavailable for purchase at time of system peak. The past criteria allowed up to 65 MW of market
purchase risk on a real time basis; the new criteria remove this risk and enhance reliability of service to the municipalities.

Platte River will continue to consider market purchases as a resource supply option, but on a longer-term, more firm basis. Platte River will collect competitive bids for capacity that could be used to meet loads in the event that Rawhide is out of service. Bids would be for capacity to be delivered approximately five years into the future and these bids would be collected each year going forward. The intent of this ongoing effort is to monitor availability and price for firm capacity that could be delivered to the Platte River system. The level of capacity requested will be up to approximately 65 MW, which is equal to the summer output of the smallest peaking units at the Rawhide site. Data regarding availability and price of purchased capacity will be used along with other information to compare possible market purchases with other supply options such as building new generation resources.

Projected Balance of Peak Loads and Firm Resources

This section describes the projected balance of peak loads and firm resources under various scenarios of resource availability.

Currently available firm resources include Rawhide Unit 101 (coal), Platte River’s share of Craig Units 1 and 2 (coal), the Rawhide peaking units A, B, C, D and F (natural gas-fired) and the CRSP and LAP hydroelectric contracts with Western Area Power Administration (WAPA). An additional purchase option may also be available from WAPA—called WAPA Replacement Power (WRP) and, in the event Rawhide is out of service, capacity may be available through an outage assistance agreement with Tri-State Generation & Transmission Association, co-owner and operator of the Craig station. Platte River’s wind generation, discussed in later sections, is not a firm resource. Each of the firm resources has some risk of availability, as outlined below:

- **Rawhide coal unit** – Historical operation indicates a forced outage rate for this unit at approximately two percent. Unexpected outages have typically been caused by failure in plant equipment (tube leaks and other malfunctions). Curtailments in output have also been caused by transmission limitation, though these have been rare.

- **Craig coal units** – Similar to the Rawhide coal unit, unforeseen outages may occur due to failure of critical plant equipment. The historical average forced outage rate for the two Craig units is approximately five percent. Transmission curtailments could also reduce or eliminate capacity from the Craig units (a rare situation historically).

- **Rawhide gas peaking units** – Unexpected outages may also occur for these units due to equipment failure. These units are only operated at peak times or when another resource is unavailable, so the forced outage rate is not a consistent unit of comparison. Historically, the average availability has been over 93 percent. As with the Rawhide coal unit, capacity reductions may also be required due to transmission limitations. Availability of fuel (natural gas) is also a risk that must continue to be managed for these units.

- **CRSP and LAP hydropower purchases** – These deliveries are made on a monthly basis, according to contracts with WAPA. Deliveries have been very reliable in the past, though transmission constraints could impact available capacity on rare occasions.
WRP hydropower purchases – Replacement power purchases may be made from WAPA, but only if excess capacity is available on the WAPA system at the time of the request. WAPA requires that such purchases be scheduled in advance. Once requested, WAPA uses their transmission system to deliver market purchases to Platte River. WAPA’s transmission system can reach some markets that are not within the direct reach of Platte River’s transmission. The prices of such purchases are not known in advance, so though reliability can be enhanced, there is some price risk associated with this option.

Forced Outage Assistance Agreement with Tri-State – The agreement only applies for a time period of up to one week per occurrence, so any unplanned outage beyond one week would require additional capacity. Also, this agreement may be terminated with two-year notice. Platte River plans to evaluate options for ensuring the agreement remains in place for several years into the future.

Figure 10 shows the summer peak-month loads and resources balance in table form for years 2012 through 2021, assuming all firm resources are available. Electric supply resources include those described above. Obligations include the aggregated municipality loads, transmission system losses and reserves (required to meet unanticipated demand or to counteract the sudden, unforeseen loss of a major resource). Base municipal loads also reflect the effects of Common DSM programs.

As indicated in Figure 10, the reserve margin remains above the 15 percent reliability criteria limit through 2020 during the annual peak—projected to occur in July.

Due to the size of the Rawhide coal resource relative to loads, the loss of this unit could seriously impact the reliability of the Platte River system, depending on the timing and duration of an outage. The recommended resource planning criteria requires that Platte River carry reserves or maintain access to firm resource capacity that is sufficient to meet load obligations even if this largest generating unit is out of service. Deficits may be met through operation of the Rawhide combustion turbine units (A through
F), pre-arranged market purchases, WRP market purchases, and the Forced Outage Assistance Agreement with Tri-State.

Assuming full utilization of the Forced Outage Assistance Agreement (100 MW) and WAPA Replacement Power purchases (46 MW) during an outage of Rawhide Unit 101—and assuming all other resources are available—the deficits remaining are shown for the ten-year forecasting horizon as the last line in Figure 11. As indicated in Figure 11, resources are sufficient to meet summer obligations until 2020. No deficits are anticipated during the winter season well beyond 2020.

**Figure 11**

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<td>Surplus (Deficit)</td>
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<td>84</td>
<td>68</td>
<td>53</td>
<td>37</td>
<td>21</td>
<td>3</td>
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</tbody>
</table>

(1) DSM based on programs measured and verified by Platte River.

DSM projections included in Figures 10 and 11 are for Common Programs, which do not include Direct Control Load Management as defined by NERC. No such programs are operated by Platte River.

The level of reserve capacity that Platte River is required to hold on its own resources has been reduced since the last IRP (2007). In the future, it is anticipated that reserves will be purchased from Public Service Company of Colorado, under the appropriate tariff for reserve service. This allows Platte River resources to be used for serving municipal loads and for providing additional surplus sales to other wholesale entities.

**Timing and Type of the Next Firm Capacity Resource**

Both of the recommended resource reliability criteria indicate that a new firm capacity resource may not be required until about 2020. However, as indicated earlier in this document, several uncertainties could change the load/resource balance during the term of this IRP. These include the potential for expanded DSM, expanded use of distributed generation, large new facilities locating within the municipalities, uncertainty in weather trends, expansion of certain end-use technologies (air conditioning, computer and entertainment technology, etc.), electric vehicles and other transportation technologies, potential annexations by the municipalities and changes in population.
Given the characteristics of municipal loads and anticipated growth, the next resource is likely to be needed only at time of system peak. Surplus capacity is available from existing resources during most periods of the year (other than peak times) and from preliminary evaluation, intermediate or baseload resources do not appear as cost effective as peaking resources. However, this assumes future load growth patterns will be similar to that which has occurred during the last several years. This also assumes that all existing resources will continue to operate as they do currently. Potential environmental legislation or regulation or other factors may require changes to generation operations. For example, if coal generation is reduced to meet greenhouse gas emission requirements, new gas generation may be required to operate more often than what is appropriate for a peaking unit. Platte River will continue to monitor and evaluate issues related to timing and type of resource that may be needed in the future.

**Transmission Considerations**

The time frame required for permitting and constructing new firm generation resources is likely to be longer than occurred for past generation additions. This is primarily because new transmission will be required to support new generation at the Rawhide site. Platte River recently invested over $100 million in transmission infrastructure within and between the owner municipalities. This investment increased capacity and enhanced reliability of service to the municipalities substations. However, it did not expand capacity from the Rawhide site, since existing capacity was sufficient to support existing generation units.

Considering new permitting requirements, lead times for transmission equipment and coordination of transmission operations with regional utilities, additional new transmission from Rawhide could take up to five years to permit and construct. It is anticipated that detailed planning and permitting for new transmission could begin as early as 2015, assuming a new generation unit is needed at the Rawhide site by 2020.

Transmission is also a significant consideration for new renewable energy deliveries, particularly for additional wind energy from southeast Wyoming. Transmission paths from Medicine Bow and Silver Sage wind sites are constrained—and further development of these sites may not be feasible due to these constraints. Consideration of new renewable resources will include an evaluation of transmission.
VI. Renewable Energy

Renewable Energy Supply Policy

The Platte River Board of Directors approved a Renewable Energy Supply Policy that guides planning and acquisition of new renewable sources to meet the needs of the municipalities. The policy provides guidance on the following planning issues.

- **Amount of renewable resources needed** – This is driven by three factors: (1) Colorado Revised Statute 40-2-124, which implements a renewable energy standard (RES) for retail utilities in Colorado, (2) voluntary requests from customers participating in the municipalities’ premium-priced renewable energy programs, and (3) individual municipalities’ renewable policies. The amount of wholesale renewable sources acquired by Platte River may also be affected by the level of renewable sources that are located within the municipalities’ retail system—as distributed renewable resources could reduce the level of wholesale supply needed from Platte River.

- **Types of renewable resources** – Renewable energy resources considered qualified include those identified in the Colorado RES—solar (photovoltaic or thermal electric systems), wind turbines, geothermal, biomass and small hydroelectric generation systems. Unbundled Renewable Energy Certificates\(^1\) (RECs) from any of these sources may also be used—as outlined in the RES.

- **Impact on resource planning** – As indicated in Figure 15, wind generation has not provided firm capacity at the time of system peak. Transmission constraints may also limit the delivery of wind generation. Therefore, existing wind generation resources are assigned no firm peak capacity value. These resources do not currently reduce the need for firm resources to meet system peak demand. Some peak capacity value may be assigned to new renewable resources, depending on the technology considered.

- **Pricing** – Tariff Schedule 7: Renewable Energy Service (Tariff 7) provides terms and conditions for renewable energy service to the municipalities and associated pricing. Tariff 7 sets a single premium price for all renewable resources combined based on cost of service for the pool of renewable sources.

Copies of the Renewable Energy Supply Policy and the current version of Tariff 7 are available upon request.

Existing Renewable Supply

In 1998, Platte River completed the development and commercial startup of two 600 kW wind turbines at its Medicine Bow Wind Project site (MBWP). Together with the City of Fort Collins, Platte River was the first utility in Colorado to provide wind energy to its customers. All the owner municipalities offered renewable energy to their customers by 1999. Five more 660 kW turbines were added in 1999, followed by another two units in 2000. In 2005, a prototype 2.5 MW wind turbine (Clipper Liberty) began operations, making a total of ten turbines with a capacity of 8.3 MW at Platte River’s Medicine Bow site. In

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\(^1\) Unbundled RECs refers to RECs purchased without any associated energy. Bundled RECs refers to RECs that are purchased with energy.
October 2009, Platte River began receiving energy from 12 MW of new wind generation at the Silver Sage Wind Project site near Cheyenne, Wyoming. Deliveries from this facility are made under a Purchase Power Agreement with the developer. The total maximum rating of generation output for existing turbines is 20.3 MW.

Figure 12 below shows production from the Vestas turbines owned by Platte River at the Medicine Bow wind site. On average the turbines produced almost exactly the predicted output during the last ten years (101 percent of estimated). The oldest Vestas turbines have operated since 1998 so are expected to begin to reach their predicted useful life of 20 years in 2017. All Vestas units will be 20 years old or more by 2020.

**Figure 12**

The performance of the Clipper turbine at the Medicine Bow site for the last five years is shown in Figure 13. The turbine began operating in April 2005, with the first full year of operation in 2006. From 2006 through 2010, the turbine produced about 89 percent of the predicted output. However, the turbine has been down since December 2010 due to a gearbox failure.

Platte River purchases the energy and RECs from this turbine through an agreement with Clipper Windpower. The term of the agreement was intended to end in April 2015. However, given the relatively high cost of repairs for this turbine, and given the fact that the turbine was installed as a prototype and the technology used in this turbine is no longer used in production units, it appears that the turbine will not be repaired. Costs for repair are paid by Clipper and Platte River only pays for output if the unit operates. For planning purposes, this turbine is no longer considered a renewable resource in Platte River’s portfolio.

In 2010, the Silver Sage wind project completed its first year of operation. A summary of performance is provided in Figure 14. This project has delivered about 90 percent of expected energy. The reduced production is thought to be the result of relatively low wind speed during 2010. Silver Sage purchases are expected to continue through September 2029.
About 56 percent of the total wholesale renewable supply in 2010 was from unbundled RECs, purchased from renewable generation facilities in Colorado, Nebraska, Oklahoma, Kansas, and Idaho. Over time, it is anticipated that the amount of unbundled RECs in the supply mix will decrease. By 2015, about one-third of the total supply is expected to come from unbundled RECs and by 2020, this level is expected to drop to about 20 percent.

**Need and Timing for Additional Renewable Energy Sources**

The table below summarizes the anticipated levels of renewable supply required by each municipality, existing sources and projected need for new sources in the future. As indicated in the table, existing qualified renewable sources are sufficient to meet the needs of the municipalities until about 2015.
(assuming no retirements). At that time, the need for new sources will be about 45,000 MWh/yr (roughly one-third more than historical deliveries from existing sources).

Projected Renewable Supply Requirements

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<td>7,300</td>
<td>7,400</td>
<td>7,500</td>
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<tr>
<td>Total Requests</td>
<td>113,161</td>
<td>113,261</td>
<td>113,361</td>
<td>154,651</td>
<td>155,119</td>
<td>155,788</td>
<td>156,656</td>
<td>157,525</td>
<td>220,173</td>
</tr>
<tr>
<td>RES Requirements:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estes Park</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Fort Collins</td>
<td>44,786</td>
<td>44,971</td>
<td>45,155</td>
<td>90,678</td>
<td>91,046</td>
<td>91,415</td>
<td>91,783</td>
<td>92,152</td>
<td>154,200</td>
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<td>Longmont</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>9,366</td>
<td>9,507</td>
<td>0</td>
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<tr>
<td>Loveland</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
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<tr>
<td>New RES Sources</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>35,267</td>
<td>35,636</td>
<td>36,004</td>
<td>39,659</td>
<td>49,669</td>
<td>115,418</td>
</tr>
<tr>
<td>Other Sources</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>9,843</td>
<td>11,573</td>
<td>14,373</td>
<td>14,873</td>
<td>15,373</td>
<td>15,973</td>
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<tr>
<td>Total New Sources</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>45,110</td>
<td>47,209</td>
<td>50,377</td>
<td>54,532</td>
<td>65,042</td>
<td>131,391</td>
</tr>
</tbody>
</table>

The specific amount and timing of new renewable sources acquired by Platte River will depend on formal requests from the municipalities in the future. These have been driven by the Colorado RES, the municipalities’ policies and voluntary participation in renewable energy programs offered by the municipalities. The bulk of the renewable supply is currently due to voluntary purchases, which are above the state RES requirements for all the cities. Only Fort Collins has reached the 40,000 customer threshold that requires a utility to meet the RES; Longmont may reach that level by about 2019. It is not anticipated that Loveland or Estes Park will reach this threshold until well after 2020.

Wholesale renewable sources to be acquired may be affected by the level of distributed renewable sources—those located within the municipalities’ retail system. The power supply agreements between Platte River and each municipality allow up to about seven MW of distributed generation by 2015. If this is from renewable generation sources, less supply would be required from Platte River.

The amount of renewable sources to be added will also depend on whether certain credits that are provided for in the Colorado RES are applied. For example, every 1.0 MWh of generation from solar facilities built before July 1, 2015, may count as 3.0 MWh toward the RES—for the life of the generator. Other credits are also provided in the Colorado RES.

It is anticipated that future wholesale renewable requirements of the municipalities will be formalized during early 2012. A Request for Proposal (RFP) for new wholesale renewable sources may then be
developed during late 2012, with the expectation that the next wholesale renewable resource options will be identified by 2013.

Though non-hydro renewable resources are currently 100 percent wind sources, it is anticipated that new renewable supply may come from other technologies. Wind generation has not provided firm capacity at time of system peak. Figure 15 shows generation from the wind project at Medicine Bow during the system peak hour since operations began. Thirteen years of actual operating data are presented in the graph. About two-thirds of the time, the generation level at time of system peak has been less than ten percent of rated output and over one-third of the time, generation was very near zero output.

**Figure 15**

Wind Generation at Time of System Peak

For future renewable supply, a range of options will be considered, including wind, biogas, biomass, solar, and small hydropower. The RFP process will seek to identify renewable resources that can provide firm capacity at the time of system peak, as well as deliver the most cost effective renewable energy. Generation options that could provide firm capacity may include biomass and biogas technologies, solar-thermal technologies (with integrated storage) and hybrid systems (renewable technologies combined with natural gas backup). Certain biomass technologies (waste-to-energy systems) may also reduce the municipalities’ waste management costs. Detailed analysis of all renewable options is anticipated during 2012 (after bids are received from the RFP process).

Though the Colorado RES and voluntary programs are the primary driver for new renewable supply for the municipalities, other considerations may include mitigation of carbon taxes or other costs for greenhouse gas emissions, fuel price risk management, support of new technology research and
development, local economic development and retail customer preferences. Platte River will work closely with the municipalities in evaluating the costs and benefits of future renewable options.

The decision to add any new wholesale renewable generation (and how much) will be made by the Platte River Board—likely sometime during 2013.
VII. Demand Side Management

Introduction

Demand Side Management (DSM) programs include “Common Programs”—those offered to customers in all the municipalities (with coordination and some or all of the funding provided by Platte River), and (2) “Municipality Programs”—those offered by each municipality. The municipalities have offered energy efficiency information and services to their customers since the 1970s and Platte River has provided energy services to the municipalities and their retail customers since 1991. Details of DSM program activities over the last ten years are summarized in the 2002 and 2007 IRPs. This IRP addresses current DSM programs and provides guidelines for the period 2012 to 2016.

Current DSM Programs

A summary of current activity for Common Programs and Municipality Programs is provided in this section—through early 2011. Plans for DSM operations beyond 2011 are provided later in this section.

Common Programs

A brief description of the Common Programs that are currently offered is provided below.

LIGHTENUP – provides information, guidance, and rebates to support energy-efficient lighting retrofits in commercial and industrial buildings.

Electric Efficiency Program (EEP) – encourages energy and peak demand savings through custom and prescriptive rebates. Unique energy-efficiency projects can earn custom rebates based on lifetime energy and demand savings. Prescriptive rebates are available for more common efficiency upgrades, such as ENERGY STAR® reflective roofs or energy-efficient fan motors and controls for commercial refrigeration.

Building Tune Up Program – provides retro-commissioning services to customers. Retro-commissioning can be thought of as a tune up for a building, to help reduce energy usage and peak demand.

Efficiency Express Program – with joint funding from Platte River, the municipalities, and a one-time grant from the Colorado Governor’s Energy Office, the program helps small commercial customers identify and implement energy efficiency improvements. Improvements may consist of efficiency retrofits that may be eligible for rebates from other programs or a building tune up.

Lighting with a Twist – this program provides rebates to retailers selling compact fluorescent lamps (CFLs), to enable them to sell CFLs for agreed-upon discounted prices. The discounts encourage residential and small commercial customers to purchase CFLs for their homes and businesses.

Northern Colorado ENERGY STAR New Homes – initiated by a coalition of regional
utilities and local governments, the Northern Colorado ENERGY STAR Homes program actively promotes major improvements in the energy efficiency of new homes being built in Northern Colorado.

**SELECT HVAC Contractor Program** – a regional effort and partnership that provides training, recognition, and marketing support to contractors willing to follow industry-accepted quality methods of installing and commissioning heating, ventilation, and air conditioning (HVAC) systems for residential and commercial buildings.

Common programs have been operated since 2002. Between 2002 and 2010, approximately $10 million has been invested in these programs, including approximately $1.5 million of funding provided by the municipalities. The estimated rate impact of Platte River spending is estimated at about one percent of retail rates on average (about 1.3 percent wholesale). Benefits of these Common Programs include the following:

- Annual energy savings of approximately 71,000 MWh
  - A 17 percent reduction in the energy-consumption growth rate, from an estimated 2.3 percent annual growth without DSM to 1.9 percent with DSM
  - About 70,000 tons of greenhouse gas reduction potential
  - Lower emissions of criteria pollutants
  - Reduced fuel consumption and associated fuel price risk
- Peak demand reduction of about 14 MW
  - Approximately a one-year delay in the need for the next firm resource
- Enhanced services to the municipalities’ retail customers
- About 1,000 businesses and an estimated 20,000 residential customers have participated, representing six percent of businesses and 17 percent of homes
- Provision of options to help customers mitigate electric rate increases
- Better comfort and lighting quality in buildings
- Improved equipment quality and reliability
- Expanded local investment in energy-efficient products and services
- Local economic benefits associated with energy efficiency business activity

Figures 16, 17 and 18 provide graphical representations of program results since 2002. Note that during the last several years, performance of the Common Programs has exceeded the goals set in the 2002 and 2007 IRPs. Energy savings are 75 percent higher than initially planned and DSM funding has been more than originally projected. Municipal utility funding of DSM programs has increased significantly since 2002.
Figure 16

Common DSM Program Spending

Figure 17

Common DSM Program Energy Savings

Figure 18

Common DSM Program Peak Demand Reduction
Municipality Programs

In addition to supporting the Common Programs, the municipalities each offer their own individual DSM programs based on goals and policies developed by municipal utility management and municipal government entities. Following are descriptions of these programs (provided by the municipalities).

Estes Park Light and Power

Estes Park Light & Power offers the following DSM programs to complement the programs offered through Platte River:

- **Annual Holiday Bulb Exchange**: for each strand of incandescent holiday lights, the customer receives a coupon worth $3 off an LED light strand (limit: three exchanges per person).
- **Free Residential Energy Assessments with CFL Bulb Exchanges**: Up to 15 CFLs can be exchanged (upon assessor’s recommendation) with every free energy assessment. All customers of Estes Park Light & Power are eligible.
- **Energy Efficiency Rebates – Residential**: Customers who use electricity for heating are eligible. Rebates cover 50 percent of costs, up to $600 for energy efficiency improvements, as defined by the energy assessor.
- **Electric Thermal Storage Heater Lease-to-Own program and Time of Day Rate**: Commercial and residential customers can finance 90 percent of the installed cost up to $5,000 for a term up to 36 months. The loan is paid off through their utility bills; interest is nominal, usually between 1-2 percent.

Fort Collins Utilities

The following table summarizes residential and commercial energy efficiency programs and services offered by Fort Collins Utilities as of 2010. Many of the programs are designed to address energy efficiency, water efficiency and behavioral savings with a coordinated approach. Note that some of the programs described here are collaborations with Platte River and may also be described in that section of the IRP.

In addition to the items in the table, Fort Collins Utilities operates Load Management and Demand Response programs, including direct load control for residential and commercial customers and demand response for commercial customers.

The **Load Management Program for Residential Customers** has over 1,000 customers with Air Conditioner Digital Control Units and over 1,750 customers with Water Heater Digital Control Units. This represents a total load under control of 2.2 MW with a breakdown of 1,000 kW and 1,200 kW in air conditioning and water heating, respectively (yearly load averages).
Fort Collins 2010 Energy Efficiency Programs and Services

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Efficiency</td>
<td>The Business Efficiency Program includes:</td>
</tr>
<tr>
<td></td>
<td>- Commercial Efficiency Assessments</td>
</tr>
<tr>
<td></td>
<td>- Rebates</td>
</tr>
<tr>
<td></td>
<td>- New Construction Design and Performance Rebates</td>
</tr>
<tr>
<td></td>
<td>- Education and Outreach</td>
</tr>
<tr>
<td></td>
<td>See fcgov.com/utilities/business</td>
</tr>
<tr>
<td>Consumer Products</td>
<td>The Consumer Products Program provides rebates for ENERGY STAR qualified</td>
</tr>
<tr>
<td></td>
<td>products at local retailers for:</td>
</tr>
<tr>
<td></td>
<td>- Clothes Washers</td>
</tr>
<tr>
<td></td>
<td>- Dishwashers</td>
</tr>
<tr>
<td></td>
<td>- Compact Fluorescent Light Bulbs</td>
</tr>
<tr>
<td></td>
<td>- Special Promotions</td>
</tr>
<tr>
<td></td>
<td>The Consumer Products Program also includes the Refrigerator and Freezer</td>
</tr>
<tr>
<td></td>
<td>Recycling Program.</td>
</tr>
<tr>
<td></td>
<td>See fcgov.com/utilities/residential</td>
</tr>
<tr>
<td>Home Efficiency</td>
<td>The Home Efficiency Program provides:</td>
</tr>
<tr>
<td></td>
<td>- Low-cost energy/water audits</td>
</tr>
<tr>
<td></td>
<td>- Participating Contractors</td>
</tr>
<tr>
<td></td>
<td>- Rebates for 23 categories of home upgrades, such as insulation, air</td>
</tr>
<tr>
<td></td>
<td>sealing, furnaces and air conditioners.</td>
</tr>
<tr>
<td></td>
<td>See fcgov.com/utilities/residential</td>
</tr>
<tr>
<td>Home Energy Reports</td>
<td>The Home Energy Reports program started in late 2009. It provides customized</td>
</tr>
<tr>
<td></td>
<td>reports for 25,000 customers which compare electric use among homes of</td>
</tr>
<tr>
<td></td>
<td>similar age and construction.</td>
</tr>
<tr>
<td></td>
<td>See fcu.opower.com</td>
</tr>
</tbody>
</table>

The Load Management Program for C&I Customers includes 25 unique customers, although some of the customers have control equipment in several premises through the service territory. An estimated total capacity of 7.4 MW is available among the C&I segment.

Combined (Residential and C&I) about 9.6 MW of peak clipping programs exist within the service territory.

Longmont Power & Communications

Longmont Power & Communications (LPC) has been providing energy services and Demand Side Management (DSM) services to its customers for nearly 15 years. During this period the range of resources has evolved to assist customers with energy-efficiency and renewable energy options. Customers can obtain information through correspondence with Customer Services staff at public events, by phone, or by email as well as through their own initiative via LPC’s website. Website resources include information on existing services and links to other government and non-profit agency websites on energy conservation. Customers can register to receive monthly electronic newsletters. PowerOutlet and PowerSource are designed to help customers be self sufficient in changing energy
efficiency behavior and are tailored to residential and commercial customers, respectively. LPC also provides free energy assessment services to customers.

In addition to supporting the Common DSM Programs, Longmont Power & Communications (LPC) has also developed and budgeted for its own DSM services and financial incentives to suit customer needs as well as the recommendations of city councils. The list of local services has evolved over the years and has included a variety of energy efficiency as well as renewable energy incentives. The current services include:

**Residential**

- ENERGY STAR appliance rebates – customers can receive a rebate for the purchase of ENERGY STAR clothes washer or dishwasher machines
- Home energy assessments – various assessment levels from a free of charge (LPC staff) to a nominal-cost professional assessment (including blower door test)
- Matching grant program – LPC matches customer investment up to a set amount on qualified home energy equipment retrofits
- LED holiday lighting – customer discounts on LED holiday light purchases for retired incandescent holiday lights
- Appliance meter loan program – free kilowatt-meter loan program for self assessment of 110 V service appliances
- EnergySmart Program (in partnership with the City and County of Boulder) – assessment, implementation assistance and financial incentives for energy efficient retrofits
- Neighborhood Sweeps program focuses on an all day, weekend event that goes door-to-door in a pre-selected neighborhood providing direct install measures such as CFLs, dryer racks and power strips to low-income families

**Commercial**

- Energy assessments – various levels (from free to fee) of customer assistance to assess potential facility retrofit opportunities
- EnergySmart Program (in partnership with the City and County of Boulder) – assessment, implementation assistance and financial incentives for energy efficient retrofits

**Loveland Water and Power**

Loveland Water and Power’s current DSM programs are focused primarily on summertime peak demand reduction. The Partnering with Power (PWP) program is a residential and commercial direct load control program aimed at achieving summertime peak demand reduction by cycling the air conditioning systems of over 3,300 participating customers.

Loveland Water and Power also provides residential customers with information on energy conservation via its web page. Commercial customers are provided with similar online information as well as via a monthly e-newsletter called the *Loveland Business Solution Center.*
Loveland is in the process of developing and implementing several new residential DSM programs (see details later in this section).

**Total Estimated Savings**

The combined savings associated with all DSM programs operated to date (Common plus Municipality Programs) are well ahead of the values projected during the previous joint IRPs (in 2002 and 2007).

A summary of estimated savings is provided below (through 2010). Additional coordination will be ongoing to enhance estimates of total combined savings over time.

- About 50 total programs – residential, commercial & industrial
- 79,000 MWh/yr energy savings – 2.6 percent reduction
- 25 MW peak reduction – about four percent reduction (nearly 2 years of peak growth)
- 78,000 metric tons of CO$_2$ reduction potential – about 2.2 percent of total
- Rate impacts for Municipal Programs vary by municipality

**Future DSM Programs**

For the period 2012 to 2016, it is anticipated that both Common Programs and Municipality Programs will continue to be offered to residential, commercial and industrial customers in the four municipalities. There has been strong customer interest for these programs and significant energy and peak demand savings have been achieved. A summary of plans for the Common Programs is provided below, followed by DSM plans in each of the municipalities.

**Key Guidelines for Common Programs**

**Program Evaluation** – Common Programs have been operated for nearly ten years with review of program performance provided primarily by Platte River and municipality staff. However, beginning in 2012, it is recommended that more detailed evaluation be conducted for selected Common Programs. A small portion of each year’s budget will be set aside to provide for independent evaluation of one or two programs per year during the period 2012 to 2016. Programs will be prioritized for evaluation based on the likelihood that the evaluation will provide actionable information that can be used to improve the program’s results and cost effectiveness. Energy and peak demand savings for Common Programs must be measurable and verifiable, with an expectation that such savings will be integrated into future system load forecasts and the associated need for new resources. These evaluations will help confirm the accuracy of program savings estimates. In addition, evaluations can look at program implementation approaches and processes, to help identify possible enhancements to program efficiency and cost effectiveness.

**Level of Investment** – Funding of Common Programs by Platte River is anticipated to continue at approximately the same level in 2012 through 2016 as in the 2011 budget. Currently, Common Programs funded by Platte River lead to slightly higher wholesale and retail rates. For future planning purposes, it is anticipated that Platte River funding for Common Programs would represent about one percent of total municipal retail revenues, on average. For 2012 forward, funding for Common Programs is estimated to be approximately $2 million annually. This represents a significant increase
from the 2007 IRP, which called for funding to grow from $0.79 million in 2007 to $1.55 million per year by 2011.

This funding estimate is for planning purposes. The actual amount of funding for Common Programs will be determined by Platte River’s Board of Directors on an annual basis, through the regular budget process. Costs and benefits of Common Programs, rate impacts, status of greenhouse gas legislation/regulation and other factors will be considered as annual funding levels are established. For example, Platte River’s 2009 Climate Action Plan consultant (KEMA, Inc.) estimated that greenhouse gas costs might have an impact as early as 2013, which would have resulted in greater cost effectiveness for DSM programs. It currently appears that any such costs would not occur until later (beyond 2013), though they may occur during the term of this IRP (by 2016).

**Cost Effectiveness** – Funding of Common Programs will be prioritized based on cost effectiveness, with the most cost effective programs given priority. Customer interest in Common Programs has exceeded budget for the last few years, so this prioritization will help make future program funding decisions and help meet budgets. Cost/benefit analysis for the Common Programs will be performed each year using financial models to determine results from a wholesale perspective. Other perspectives include the municipal utility, program participants, non-participants, and all ratepayers. A summary of existing costs and benefits from multiple perspectives is provided in the following table. Costs and benefits listed are readily quantifiable; as indicated above, other benefits exist that are difficult to quantify.

### DSM Program Cost and Benefits – Multiple Perspectives

<table>
<thead>
<tr>
<th>Perspective</th>
<th>Costs</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wholesale Supplier</td>
<td>• Program operations</td>
<td>• Increased surplus sales</td>
</tr>
<tr>
<td></td>
<td>• Lost municipal revenues</td>
<td>• Reduced fuel cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reduced purchases</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Delayed capital costs</td>
</tr>
<tr>
<td>Municipal Utility</td>
<td>• Program operations</td>
<td>• Reduced wholesale purchases</td>
</tr>
<tr>
<td></td>
<td>• Lost retail revenues</td>
<td></td>
</tr>
<tr>
<td>Program Participants</td>
<td>• Program cost sharing</td>
<td>• Utility bill reductions</td>
</tr>
<tr>
<td></td>
<td>• Increased electric rates</td>
<td>• Other (non-quantifiable)</td>
</tr>
<tr>
<td>Non-Participants</td>
<td>• Increased Electric Rates</td>
<td>• Other (non-quantifiable)</td>
</tr>
</tbody>
</table>

Since the last IRP significant changes have occurred, which have influenced DSM program cost effectiveness (and planning in general). These include decreasing prices for surplus sales, natural gas and purchased power, as well as increasing electric rates and more difficult economic conditions overall (relative to 2007). In the future, there may be benefits associated with reduced greenhouse gas emissions (due to reduced electricity consumption) and/or other changes. Uncertainty exists regarding many of the cost/benefit variables and updated estimates will be developed to improve the accuracy of rate impact analysis over time. Cost effectiveness will need to be considered from multiple perspectives in a coordinated manner to help define the best overall mix of future DSM programs.
**Funding Equity** – The portion of Common Program funding provided by Platte River to each of the municipalities will be approximately equal to the municipalities’ equity ownership share in Platte River. Approximate equity values for 2010 were as follows: Estes Park—5 percent, Fort Collins—48 percent, Longmont—26 percent and Loveland—21 percent. In order to allow flexibility in program operations, equity will be approximately maintained over a rolling three-year averaging period. When appropriate, and when a municipality is unlikely to receive its equity share of DSM funding, Platte River may provide other energy services (beyond the Common Programs) to balance equity (if requested). Platte River and municipality staff will work together to ensure that the tactics used to maintain funding equity are supportive of each of the municipalities’ DSM program goals.

**Anticipated Energy and Demand Savings** – During the period 2012 to 2016, it is anticipated that Common Programs will increase overall annual energy savings from the current level of 71,000 MWh to about 126,000 MWh. This assumes funding at the current 2011 budget level of approximately $2 million from Platte River. Additional funding from the municipal utilities may result in greater energy savings. On an annual basis, Common Programs will save about 0.32 percent of energy sold to the municipalities, so that after five years, sales will be 1.6 percent lower than without the programs. Peak demand reductions are expected to increase from the current 14 MW to about 25 MW by 2016. This level of peak demand reduction would delay the next system generation resource by about 20 months.

**Greenhouse Gas Reduction Potential** – Potential reductions in greenhouse gas (GHG) emissions (particularly CO₂) will be estimated each year for the DSM programs. As indicated in Platte River’s 2009 Climate Action Plan, energy efficiency programs are among the lowest cost means of reducing GHG emissions. Various DSM programs provide significantly different GHG reduction potential. For example, programs that target only peak demand do not typically reduce GHG emissions. The Common Programs will be focused on energy reduction. Some Municipality Programs focus on peak demand.

**Municipality / Platte River Staff Coordination** – A team of DSM professionals from each of the municipalities and Platte River will continue meeting on a periodic basis to plan and coordinate the planning, delivery, and evaluation of Common Programs.

**Common Program Roles and Responsibilities** – Selecting, designing, marketing, and administering DSM programs is a multifaceted endeavor, requiring close coordination of various utility staff, customers, and trade allies (i.e., potential providers of energy-efficient products or services). For Common DSM Programs the overall effort is shared among Platte River and the municipalities, with fundamental roles anticipated to be delineated as indicated in the following table. The division of responsibilities varies slightly among the municipalities depending on available DSM resources.
### DSM Program Tasks – Common Programs

<table>
<thead>
<tr>
<th>Task</th>
<th>Platte River</th>
<th>Municipality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program evaluation &amp; selection</td>
<td>joint role</td>
<td>joint role</td>
</tr>
<tr>
<td>Program design &amp; upkeep (establishing efficiency requirements and rebate levels, establishing program procedures, developing application materials, identifying market channels, branding)</td>
<td>joint role</td>
<td>joint role</td>
</tr>
<tr>
<td>Trade ally management (coordination, promotion, outreach, and support)</td>
<td>lead role</td>
<td>supporting role</td>
</tr>
<tr>
<td>Customer promotion and outreach</td>
<td>supporting role</td>
<td>lead role</td>
</tr>
<tr>
<td>Program administration (application review, application approval, rebate request processing, project-level measurement &amp; verification, payment processing)</td>
<td>lead role</td>
<td>supporting role</td>
</tr>
<tr>
<td>Overall program evaluation, measurement and verification</td>
<td>lead role</td>
<td>supporting role</td>
</tr>
<tr>
<td>Load forecast integration</td>
<td>lead role</td>
<td>supporting role</td>
</tr>
</tbody>
</table>

In addition to the formal provision of Common Programs, Platte River staff will continue to provide technical support and other energy services to the municipalities, within the limits of staff resources and expertise. Areas of support include energy auditing/assessment, distributed generation evaluation and assistance in providing services to key account customers.

**Future Plans for Municipality Programs**

**Estes Park Light and Power**

Estes Park Light & Power plans to continue the programs described on page 30. Information regarding these programs can be obtained by contacting the utility department or visiting their web site at [http://www.estesnet.com/LightPower/](http://www.estesnet.com/LightPower/).

**Fort Collins Utilities**

The primary goals of Fort Collins’ *Energy Policy* are to sustain high system reliability and to contribute to the community’s climate protection goals and economic health. The purpose of the policy is to provide strategic planning guidance for Fort Collins Utilities (Utilities). The Energy Policy 2050 vision is to ensure highly reliable, competitive, carbon neutral electricity supplies, managed in a sustainable, innovative, responsible and efficient manner for the Fort Collins community. The Energy Policy and the most recent Annual Update are available at [http://www.fcgov.com/utilities/what-we-do](http://www.fcgov.com/utilities/what-we-do).

The Energy Policy Annual Update reviews progress made to date in the primary goal areas of the policy: reliability, climate protection, economic health and the City’s collaboration with Platte River.

The policy includes the following specific targets and goals related to energy efficiency and load management.

- Achieve annual energy efficiency and conservation program savings of at least 1.5 percent of annual energy use
- Increase the power managed by load management, smart grid and distributed generation to at least five percent of 2005 system peak demand by 2015 and at least 10 percent by 2020
The City expects the following outcomes and benefits stemming from implementation of the Energy Policy.

- Continued high electric system reliability
- Modernization of electric metering system
- Long-term asset management of electric distribution system
- Reduction of greenhouse gas emissions from efficiency, conservation and renewable energy
- Affordable electric bills, through competitive rates, efficiency and conservation
- Local economic benefits resulting from a healthy municipal utility, high electric system reliability, competitive electric rates and investments in efficiency and renewable energy

Funding for implementation of efficiency programs related to the policy come from rate revenue. As of January 2011, 4.6 percent of electricity revenues are directed towards efficiency and load management programs.

The energy efficiency goals of the Energy Policy translate to achieving program savings of 22,000 MWh per year. Over the IRP period of analysis, Fort Collins will achieve cumulative energy savings of approximately 100,000 MWh annually and over 15 MW by the end of the five years.

In the fall of 2009, Utilities received notice of a $15.4 million matching funds grant award from the Department of Energy as part of the American Recovery and Reinvestment Act. The funding will accelerate plans to implement Smart Grid technologies throughout the electric distribution system that serves the community.

The Smart Meter Fort Collins project will link energy usage and home area networks, automate and optimize grid operations to improve reliability and efficiency, enable customers to control energy usage, improve the environment and stimulate economic growth by creating jobs and business opportunities.

Smart Meter Fort Collins integrates the electric power distribution system with high-speed broadband communications, connecting the customer’s delivery point with a fully integrated power delivery system. Smart Meter Fort Collins encompasses a number of technologies intended to enhance the quality, reliability, and value of service provided to Fort Collins customers. The long-term improvements in the electric delivery grid include:

- Advanced Metering Infrastructure
- Demand Response (in-home displays, in-home thermostats and air conditioning (AC) and water heater control switches) to enable customer response during peak periods and help manage loads
- Grid Automation to enhance transmission and distribution automation, increase reliability and provide remote operations
- Security Enhancements
Longmont Power & Communications

The City of Longmont has developed an Integrated Sustainability Plan (ISP) that includes energy efficiency and savings goals. The ISP is currently being evaluated for adoption by City Council and could potentially be integrated with standard City operating procedures. LPC will monitor the ISP adoption process and inform Platte River accordingly.

Generally speaking during the next IRP period LPC will continue to facilitate and encourage customers to participate in existing Common Programs and evolve the local DSM services as needed. Apportionment of LPC’s city-share funding and potential budget funding for common services as well as budget funding for local services shall be assessed at least annually. To facilitate the assessment process, LPC plans to develop a variety of DSM metrics. Using the metrics will allow LPC to consistently measure all DSM service effectiveness and make sound recommendations to City Management and City Council in the budget process. Future DSM services or modifications to existing services shall be based on the DSM metrics. Information regarding Longmont’s DSM programs can be obtained from LPC or by visiting their web site at [http://www.ci.longmont.co.us/lpc/](http://www.ci.longmont.co.us/lpc/).

Loveland Water and Power

LWP future energy efficiency and DSM goals are as follows:

1. Improve customer satisfaction by providing them with information, ideas, and solutions to reduce their energy consumption.
2. Reduce energy consumption to delay the need for additional generation and additional distribution system capacity.
3. Participate in regional efforts to increase utility collaboration and support Platte River goals.
4. Continue to provide high levels of electric system reliability by operating the system as efficiently as possible.
5. Reduce peak power demand by three percent a year.
6. Provide customers the maximum energy-efficiency benefit at the lowest possible cost.

The primary strategy for lowering peak demand will continue to be an air conditioning direct load control program called Partnering with Power, peak messaging and customer education.

LWP will be providing eight additional residential energy efficiency pilot programs in 2011. The eight additional residential programs approved by City Council in July 2010 will be funded in part by the utility and by a one percent rate increase to residential customers. The programs are as follows:

- **Larimer County Youth Corps** – LWP is partnering with the Larimer County Youth Corps to offer basic audits and direct installs of water and energy items in low income homes.

- **Home Energy Reports** – The largest and most targeted program will be the launch of the Home Energy Reports program to 15,000 residents. LWP is using informative billing to educate our customers on how much energy is being used, how it is being used and where energy can be saved while hoping to save customers money on their utility bills.

- **Northern Colorado ENERGY STAR Homes** – LWP partners with Northern Colorado ENERGY STAR Homes to support ENERGY STAR qualified new homes.
Details on the five remaining programs are still in development, but the focus will be on rebates for ENERGY STAR clothes washers, a tune up program for air conditioning, a refrigerator and freezer recycling program, a three-tier home energy audit, and outreach and education in Loveland’s schools.

LWP will focus on collaborating with other utilities, successfully marketing each program to LWP’s residential customers and providing customers with ways to help them reduce their utility bills.

Information regarding Loveland’s DSM programs can be obtained by contacting LPW or by visiting their web site at http://www.ci.loveland.co.us/wp/power/main.htm.

**Coordinated Integration of DSM into the System Load Forecast**

A key goal during the term of this IRP is to integrate measurable DSM into future system load forecasts, so that the effects of DSM are included in the next supply-side resource decision. Currently, the estimated savings from Common Programs are included in the wholesale load forecast and each municipality individually treats DSM in its own forecasting process. The goal is to include verifiable savings from both Common Programs and Municipality Programs in the wholesale system forecast. The following general approach will be considered for developing a combined DSM forecast:

- Establish general measurement and verification standards
- Evaluate each DSM program based on agreed to standards
- Include a determination of how long the program savings persist (the current assumption is ten years—average for all programs)
- Aggregate estimated energy and peak demand savings
- Integrate aggregated savings into system load forecast

It is anticipated that an initial estimate of overall (combined) DSM savings can be developed during 2012, for inclusion in the 2013 system forecast. The estimates are anticipated to improve over time as program evaluation and other experience expands. The system level estimates will focus on savings over the next ten years, consistent with the ten-year system forecast.
VIII. Environmental Management

Introduction

The Platte River Board has adopted an Environmental Policy and a set of Environmental Principles to guide management and staff in planning and day-to-day operations and to clearly communicate a set of priorities to everyone in the organization. This policy is outlined below.

PLATTE RIVER POWER AUTHORITY
Environmental Policy and Principles

Platte River provides reliable, low-cost electricity in an environmentally responsible manner to its owner communities of Estes Park, Fort Collins, Longmont, and Loveland. Depending on water storage conditions, about one-fifth of the municipalities’ electrical energy requirements are served from renewable resources including hydropower and wind. Platte River’s other energy resources are fueled with coal and natural gas.

Platte River uses state-of-the-art air quality control systems at its power generation stations and meets or exceeds all applicable environmental laws and regulations. As new legislation and regulations are proposed, Platte River participates in public processes and supports additional control requirements where costs are commensurate with measurable environmental benefits. In addition, as technology improves and opportunities arise, Platte River will be proactive in evaluating and implementing improvements in its power operations that balance environmental and other socio-economic concerns.

Platte River Power Authority...

- considers environmental factors an integral part of all planning, design, construction, and operating decisions.
- reinforces environmental compliance through program reviews, training, and by communicating environmental values throughout the organization.
- encourages public participation in planning for the location of major facilities as a means of avoiding and resolving conflicts and to achieve a balance between the need for an economic electric supply and environmental quality.
- conserves natural resources such as water, soils, grasslands, and wetland areas through efficient use and careful planning. Where needed, Platte River restores land disturbed by its operations.
- encourages employees to bring environmental issues forward to assure Platte River’s compliance with applicable laws, rules, regulations, and permits.
- strives to reduce environmental health and safety risks to its employees and the communities in which it operates by (i) maintaining safe and healthful working conditions, (ii) responsible design and operation of its facilities, and (iii) being prepared for emergencies.
- works with its customers to support cost-effective programs to conserve energy.
- coordinates its generation and transmission planning with neighboring utilities to minimize over-building or under-utilization.
- considers environmentally progressive technologies such as wind and solar power in addition to other renewable technologies to meet its future generation needs.
Environmental Management System

The “environmentally responsible” aspect of Platte River’s mission is carried out through the operation of its Environmental Management System (EMS), described graphically in Figure 19. The EMS enables staff and management to coordinate efforts to continuously evaluate environmental performance.

Since no new generating resources are planned during the period of this IRP, no environmental assessment of possible generation technologies is provided in this document. These analyses will be conducted in the future to determine the best fit for Platte River’s long-term resource needs.

Climate Action Plan

In 2007, the Governor of the State of Colorado issued the Colorado Climate Action Plan, which included a goal of reducing statewide greenhouse gas emissions to 20 percent below 2005 levels by 2020 and 80 percent below 2005 levels by 2050. To meet the 2020 goal, Platte River would need to reduce carbon dioxide emissions by approximately 700,000 metric tons. The Governor’s Energy Office asked the state’s electric generation utilities to voluntarily develop plans to meet these non-binding targets using approaches specific to each utility’s unique circumstances. Platte River developed its own unique Climate Action Plan (CAP) in 2009. The plan is not prescriptive, but rather outlines a set of options that
Platte River can adopt to meet the 2020 reduction target and prepare for emerging federal or regional regulations.

To meet the 20 percent by 2020 target, an analysis was performed to determine the amount of carbon dioxide emissions that could be saved by each of several options identified. Figure 20 shows the emissions reduction potential for each analyzed measure:

**Figure 20**

The chart demonstrates that Platte River can achieve the 2020 emissions target with a combination of the evaluated measures. Achieving the 2050 target will involve additional measures. Carbon dioxide mitigation potential and costs for each measure were estimated compared to a business-as-usual scenario to determine the relative cost-effectiveness for each measure. Costs reflect Platte River’s costs (for example, new technology capital costs, operations and maintenance costs, program costs, lost revenues) and benefits (reduced fuel costs). There may be costs or benefits to other parties that fall outside this analysis. For example, participants in energy efficiency and distributed photovoltaic programs will have both costs and savings related to the measures installed.

The most cost-effective measures include reduction of surplus reserve energy sales, aggressive demand side management (accounting for up to a one percent reduction of energy demand per year or about 10 percent by 2020), and increasing wind generation.

Since completing the CAP, the municipalities and Platte River have expanded demand side management programs and new wind generation has been added at the Silver Sage Wind site. Platte River’s Board of Directors will make policy and budget decisions associated with any future implementation of options for reducing greenhouse gas emissions.
Additional carbon dioxide reduction strategies could be pursued, but at higher costs. Such strategies could include transition to more natural gas generation and expanded renewable generation, including concentrated central station solar generation or distributed solar photovoltaic generation. It is unclear at this time how Platte River could meet the 2050 target of an 80 percent reduction below 2005 levels. New technologies would likely be needed, along with expansion of the more expensive existing technologies.

The evaluation conducted for the Climate Action Plan shows that Platte River can achieve the 2020 target. Meeting the 20 percent reduction was estimated to raise wholesale rates about 16 percent by 2020 in the 2009 analysis. Rate impacts may be different using more updated assumptions.


**Coal to Gas Conversion Studies**

In an effort to consider more significant greenhouse gas emission reductions than the 20 percent by 2020 goal in the Governor’s plan, Platte River staff considered the hypothetical option of replacing coal generation with natural gas-fired generation sources. Two options were considered: (1) replacing generation from the Craig coal units with combined cycle gas units (located at the Rawhide site), and (2) conversion of the Rawhide coal unit to be fueled with natural gas.

Based on very preliminary estimates, Platte River’s wholesale rate would increase about 140 percent over the current rate by 2020 if Platte River were to convert all existing coal resources to natural gas. Retail cost increases were estimated at 120 percent on average. Reductions in total CO₂ emissions may reach approximately 57 percent.
IX. Recommended Actions

Recommendations of this IRP are summarized below.

Continue to Operate Demand Side Management Programs

It is recommended that Common Programs continue at approximately the same level in 2012 through 2016 as in the 2011 budget—approximately $2 million annually. This represents a significant increase from the 2007 IRP, which called for funding to grow from $0.79 million in 2007 to $1.55 million per year by 2011. Retail rates are projected to be about one percent higher with Common Programs than they would be without the programs.

Individual Municipality Programs are also anticipated to continue, as guided by each individual municipality’s policies and plans. A key goal during the term of this IRP is to integrate measurable DSM load reductions into future system load forecasts, so that the effects of DSM are included in the next resource decision. It is anticipated that an initial estimate of overall (combined) DSM savings can be developed during 2012, for inclusion in the 2013 system forecast, with refinements made in future years. The estimate will focus on savings over the next ten years, consistent with the ten-year system forecast.

Continue Implementation of the Renewable Energy Supply Policy

Existing qualified renewable sources are sufficient to meet the needs of the municipalities until about 2015. At that time, the need for new sources will be about 45,000 MWh/yr, which represents about one-third more renewable supply than historical deliveries from existing sources. It is recommended that future wholesale needs of the municipalities be confirmed and that Request for Proposals (RFP) for new renewable sources be developed during 2012, with options for the next renewable resource identified by 2013. Though non-hydro renewable resources are currently 100 percent wind sources, it is anticipated that new renewable sources may come from other technologies. The RFP process will seek to identify renewable resources that can provide firm capacity at the time of system peak, as well as deliver the most cost effective renewable energy. Any decision to add new wholesale renewable sources would be made by the Platte River Board of Directors.

Update Resource Planning Criteria

Beginning in 2012, it is recommended that the following criteria be used for future resource planning:

- Carry reserves or have access to firm capacity that is sufficient to meet load obligations whenever the Rawhide coal unit is out of service
- Maintain a minimum planning reserve margin of 15 percent

These new criteria mitigate the risk that resources are insufficient to meet loads if power is unavailable for purchase at time of system peak. The past criteria allowed up to 65 MW of market purchase risk on a real time basis; the new criteria remove this risk and enhance reliability of service to the municipalities.
Monitor Development of Regional Generation and Transmission Resources

Xcel Energy, Tri-State, WAPA or other utilities in the region may consider development of joint projects in the future. Platte River will continue to maintain relationships with these entities to ensure participation options in any new resource that may be beneficial.

Equally vital to the reliable supply of electricity is coordinated transmission planning. Platte River works with the Front Range Planning Group and the Colorado Coordinated Planning Group to review issues associated with transmission constraints and the need for new projects in the region.

Platte River will continue to monitor future generation and transmission studies as they develop. The outcomes of such integrated needs assessments are critical to resource planning efforts not only because favorable opportunities for joint participation in resource development projects may arise, but also because the actions taken by other entities may directly affect the availability and pricing of electric energy, capacity, fuel, transmission, and ancillary services, all of which have implications for the economics of future Platte River projects.

Monitor Load Forecasts and Evaluate Contingencies

The need for new resources and the timing of planning, permitting, and public information processes is strongly dependent on actual load growth. Platte River staff will continue to update load forecasts annually and will continue to seek opportunities to enhance forecasting and resource planning techniques.

Staff will also actively pursue contingency options in the event that forecasts or other market factors change significantly over time. These include seeking expanded market purchase options, evaluation of new transmission paths for power delivery and monitoring of distributed generation technologies.

Tracking of Recommended Actions

Progress toward the three main recommendations in this IRP will be tracked as follows:

**DSM** – goals and performance will continue to be reported to the Board of Directors on a regular basis. As in the past, DSM results will be compared with the IRP goals outlined above, including estimated energy and capacity benefits associated with DSM. Tracking will be enhanced through expanded measurement and verification of actual savings.

**Renewable Energy** – The next key milestone for renewable energy planning will be the Request for Proposal, anticipated in 2012. Energy and capacity benefits from renewable sources will continue to be reported to the Board of Directors on a regular basis.

**Planning Criteria** – Though no new resources are required during the term of this IRP, the new criteria will be referenced in future resource planning discussions with the Board of Directors.
X. Public Participation

Several public communications processes of recent years have influenced the content of this (and prior) IRP documents. Frequent interactions between Platte River, the member utilities, municipal boards and councils, and the citizens of member communities have facilitated an effective exchange of information on the public issues of electric load growth, resource supply, and environmental stewardship. These exchanges include:

- Surveys of customers by Platte River and the municipal utilities, soliciting citizens’ views on the importance of renewable resources, DSM activities, and environmental concerns, as well as system reliability, cost, and customer service.
- Community surveys assessing attitudes and levels of interest in adding renewable resources to Platte River’s resource portfolio.
- Public hearings and permitting proceedings for the gas-peaking units at the Rawhide Energy Station and for new transmission and substation installations.
- Periodic presentations to customer groups regarding resource planning issues, electric industry trends, rates, renewable energy and DSM.
- Frequent interactions with residential and commercial/industrial customers in each member community—as part of implementing DSM programs.
- News releases and advertisements relating to renewable energy, DSM program offerings, generation unit performance, greenhouse gas reporting, construction of new generation and transmission facilities.
- Meetings with the Fort Collins Electric Board, Fort Collins Natural Resource Advisory Board, Fort Collins Air Quality Advisory Board, Loveland Utilities Commission, Estes Park Board of Trustees Utilities Committee, Longmont City Council and other groups to discuss electric energy supply policy, electric system reliability, DSM activity and renewable energy programs.

Specific public information activities associated with this 2012 IRP included the following:

- Five meetings were held with local boards, committees, commissions and councils as outlined below. Details of the draft IRP were presented to and discussed with each group.
  - April 6, 2011: Fort Collins Electric Board, 5:30 p.m., 117 N. Mason in Fort Collins – Large Conference Room
  - April 14, 2011: Estes Park Town Trustees (Public Safety, Utilities and Public Works Committee), 8:00 a.m., 170 MacGregor Avenue in Estes Park – Town Hall Board Room
  - April 18, 2011: Fort Collins Air Quality Advisory Board, 5:30 p.m., 215 N. Mason in Fort Collins – Conference Room 1-A
  - April 20, 2011: Loveland Utilities Commission, 4:00 p.m., 200 N. Wilson Avenue in Loveland – Service Center Board Room
  - April 26, 2011: Longmont City Council, 7:00 p.m., 350 Kimbark Street in Longmont – City Council Chambers
Draft copies of the IRP were distributed as follows:

- Mailed to Board members
- Mailed to City managers and utility managers
- Distributed to members of the five local groups identified above (email)
- Distributed to local governmental and environmental groups
- Posted on Platte River’s Web site
- Posted in municipal libraries
- Copies provided at Platte River’s offices

Public notice of the draft IRP and notice of the planned public hearing was made in each of the municipalities’ major newspapers.

On April 28, 2011, the Platte River Board conducted a public hearing, where a summary of the draft IRP was presented. Public comment was received at that meeting and the Board of Directors discussed the draft IRP.

The meetings with local groups primarily followed a question and answer format focused on existing resources, energy efficiency, and renewable energy. Based on questions and comments during the public meetings and public hearing—and from further review of the draft IRP by staff—several enhancements have been incorporated into this IRP. These are summarized below.

- DSM results were updated to include combined savings & costs for all programs.
- A reference was included to provide access to the details of EPA emissions data on coal plants in the U.S.—for criteria pollutants and CO2 emissions.
- Information regarding potential new loads such as electric vehicles and clean energy manufacturing was expanded.
- Additional information was provided on Platte River’s transmission system and associated planning issues.
- Updates were made to the renewable energy section regarding the forecast and resource operations.
- Discussion of potential benefits associated with new renewable technologies was expanded—to include consideration of firm capacity from certain resource types, potential to hedge fossil fuel prices and consideration of options for utilization of waste steams (biomass and waste-to-energy technologies).
- Information regarding anticipated changes to the wholesale rate structure was added.
- Additional background on resource operations and integration of existing resources was added.
- Information was provided on fuel price increases for coal and natural gas.
- Additional references were provided for planning documents and other information that is currently available from the municipalities and Platte River.
- The summary of Platte River’s Climate Action plan was expanded and a link was provided to directly access the CAP on Platte River’s web site.
- Information related to tracking the recommended actions over time was added.
- Updates were made to this public information section to reflect activities since the initial draft IRP.
The Platte River Board of Directors approved this 2012 Integrated Resource Plan at the May 26, 2011, Board meeting. The document was also submitted to Western Area Power Administration, in accordance with their Energy Planning and Management Program (initiated by the 1992 Energy Policy Act).