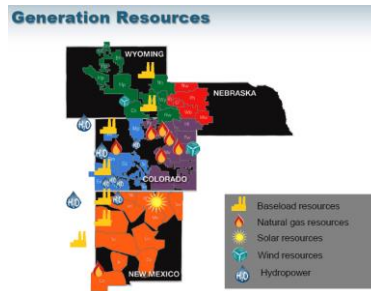


# *Tri-State Generation and Transmission:*



## **Time for A New Equation For Affordability**



**Oct 2014**

**By the Coop Members Alliance**

With Support from  
**Colorado Renewable Energy Society**  
**Clean Energy Action**  
**Western Clean Energy Campaign**

## PREFACE

This report is written with the goal of helping Tri-State Generation and Transmission (“TSGT”) take better advantage of the remarkable renewable energy resources in TSGT territory and to create a 21<sup>st</sup> century rural electric coop generation and transmission organization.

It is the authors’ belief that there are many fine staff members at TSGT who are coming to understand the benefits—and the imperative—of moving to a more renewable energy dependent system. This report is intended to generate discussion and policy changes at TSGT and within its member coops.

The vision of this report is of a vibrant 21<sup>st</sup> century TSGT organization that has learned to integrate high levels of renewable energy and has reduced reliance on non-renewable fuels such as coal, oil and natural gas. In doing so, member coops have been empowered to adopt strong energy efficiency programs and to use the abundant renewable energy resources in their territories. In addition, the member coops have learned from other coops how to develop and operate the efficiency programs and renewable systems that will help to manage and meet their members’ electrical needs in the post-fossil fuel era.

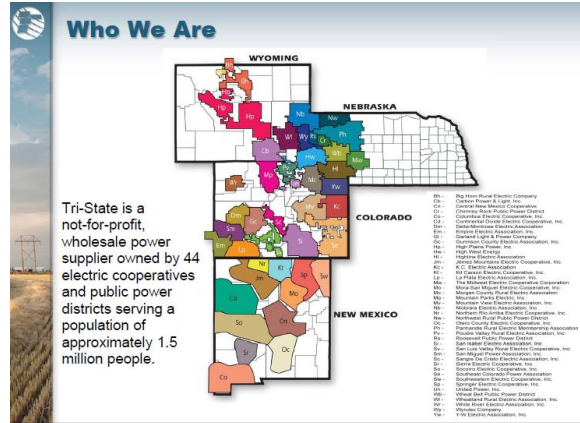
**We believe that TSGT and its member coops can—  
and will—become very important clean energy  
success stories in the 21<sup>st</sup> century.**

This report couldn’t have been written without the help of many groups and individuals. Our goal is to provide the most accurate information possible. Please send corrections or additions to [coopmembersalliance@gmail.com](mailto:coopmembersalliance@gmail.com).

# EXECUTIVE SUMMARY

## BACKGROUND

Tri-State Generation and Transmission serves 44 rural coops in Colorado, Wyoming, New Mexico and Nebraska. Tri-State's headquarters are in Westminster, Colorado in the Denver metro area.



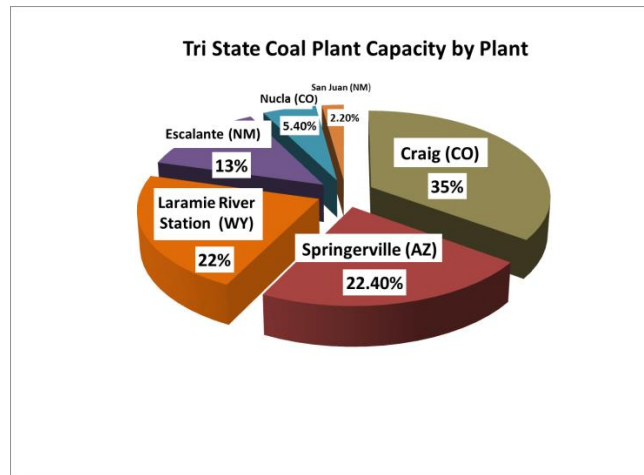
## THE GOOD NEWS

The good news is that Tri-State has already begun to take advantage of the abundant wind and solar resources that exist in its territory, that member coops are already beginning to experiment with increased reliance on local generation, that the price of free-fuel renewable energies is falling rapidly and that there are an increasing number of Tri-State staff members who understand the need for a new equation for affordability in the 21<sup>st</sup> century.

## COAL IS NO LONGER THE BEST CHOICE FOR AFFORDABLE ELECTRICITY

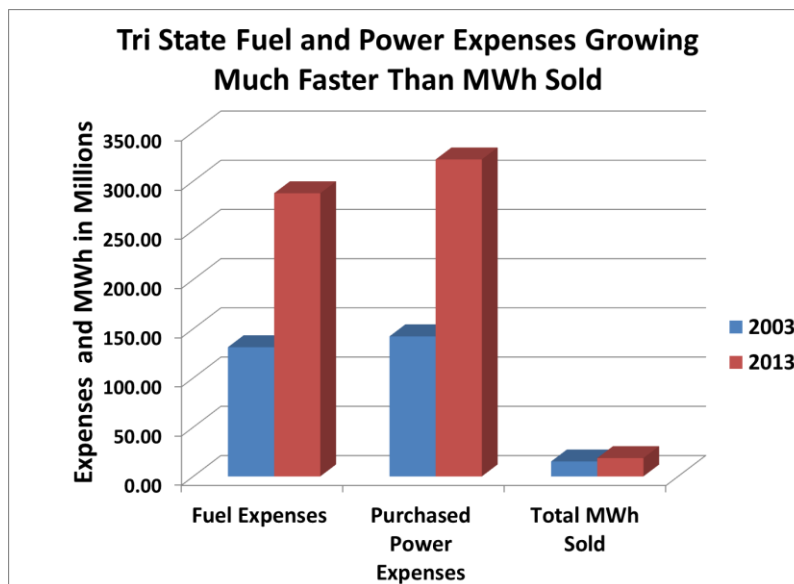
Currently, Tri-State is very coal dependent with typically over 70% of its electricity being provided by a fleet of aging coal plants.

## Tri-State Coal Capacity by Plant and State<sup>1</sup>



Tri-State is experiencing fuel and power expenses that are rising much faster than its sales—a fact that is very likely driven in significant part by Tri-State’s heavy reliance on coal—a non-renewable fuel that is rising in price.

## Tri-State Fuel and Power Expenses Compared to MWh Sales 2003 v 2013



<sup>1</sup> Information generally from Tri-State April 23, 2010 presentation available from <http://www.tristategt.org/ResourcePlanning/ResourcePlanDoc.cfm>

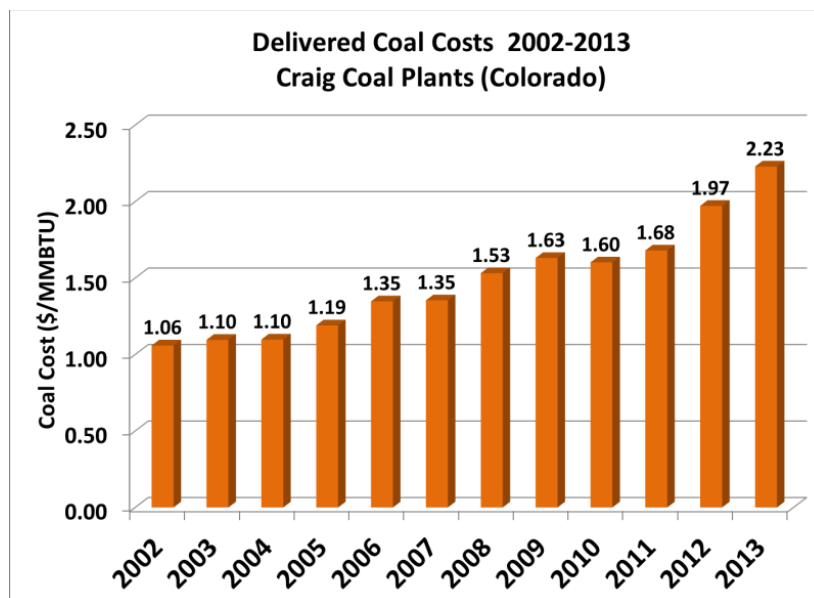
A review of Tri-State's coal costs shows they are rising much more quickly than inflation with coal costs for the Craig coal plant more than doubling in the last decade. In addition, as discussed in the full report, Tri-State is relying on coal mines that are playing out and there are serious questions about the long term supply of coal for Tri-State's coal plants.

### Delivered Coal Costs at TSGT Coal Plants<sup>2</sup>

TSGT Coal Plant	2003 Delivered Coal Cost	2013 Delivered Coal Cost	% Increase Per Year 2003-2013
Craig (CO)	\$1.10/MMBTU	\$2.23/MMBTU	7.3% per year
Springerville (AZ)	\$1.33/MMBTU	\$2.01/MMBTU	4.2% per year
Laramie River Station (WY)	\$0.55/MMBTU	\$1.14/MMBTU	7.5% per year
Escalante (NM)	\$1.27/MMBTU	\$2.34/MMBTU	5.5% per year
Nucla (CO)	\$1.23/MMBTU	\$1.87/MMBTU	4.3% per year
San Juan (NM)	\$1.77/MMBTU	\$2.81/MMBTU	4.7% per year

### Coal Cost at Craig Coal Plants Rising Quickly

Average Coal Costs Derived from EIA 923 Data<sup>3</sup>



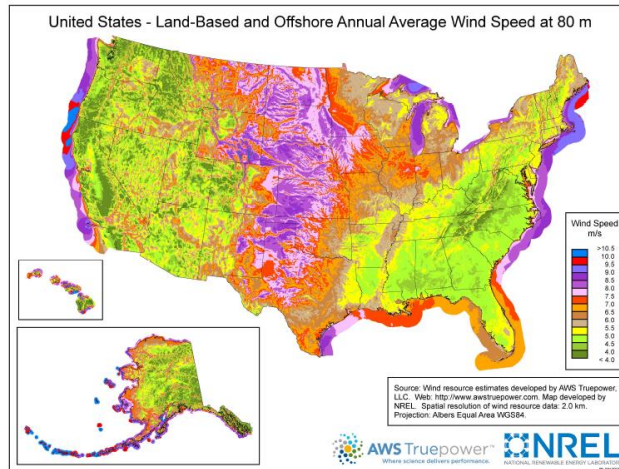
<sup>2</sup> Data from EIA 923 database. There are some differences depending on the version of 923 data used, but the differences are not large. <http://www.eia.gov/electricity/data/eia923/>

<sup>3</sup> Average delivered coal costs derived from EIA 923 data available from <http://www.eia.gov/electricity/data/eia923/>

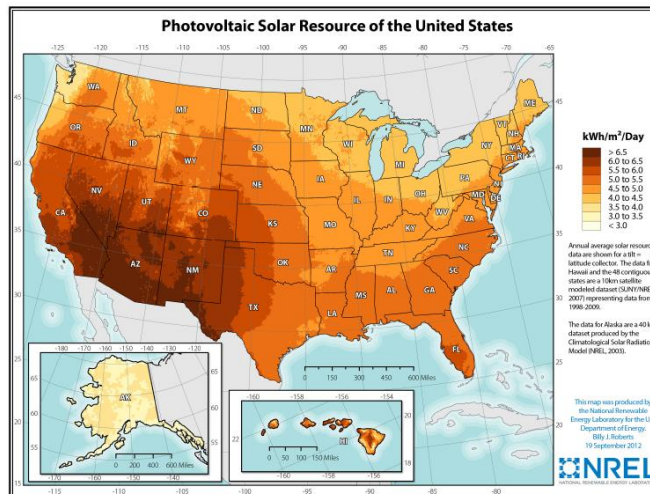
## TIME FOR A NEW EQUATION FOR AFFORDABILITY

Given the rising costs of coal and concerns about long term coal supply, it is time for Tri-State to consider a new equation for affordability. Tri-State has abundant wind, solar, geothermal and small hydro resources in its territory and as discussed in the full report, the price of these technologies has been plummeting.

### US Wind Resources at 80 Meter Height<sup>4</sup>



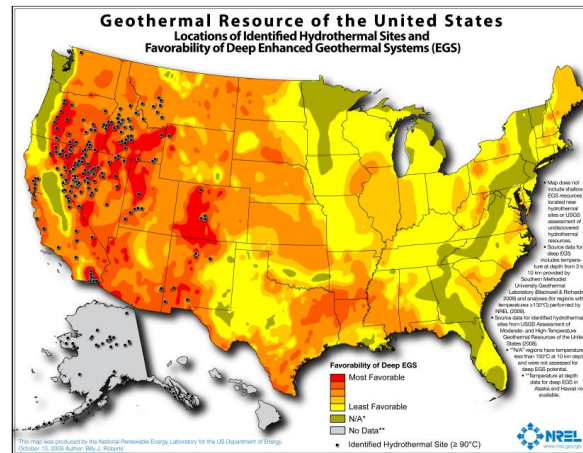
### Photovoltaic Solar US Resource Potential<sup>5</sup>



<sup>4</sup> For maps of US wind resources, refer to <http://www.nrel.gov/gis/wind.html>

<sup>5</sup> US photovoltaic resource map from [http://www.nrel.gov/gis/images/eere\\_pv/national\\_photovoltaic\\_2012-01.jpg](http://www.nrel.gov/gis/images/eere_pv/national_photovoltaic_2012-01.jpg)

## Geothermal Resources of the United States<sup>6</sup>



## RECOMMENDATIONS

As Tri-State searches for a new equation for affordable electricity, the following recommendations should be considered:

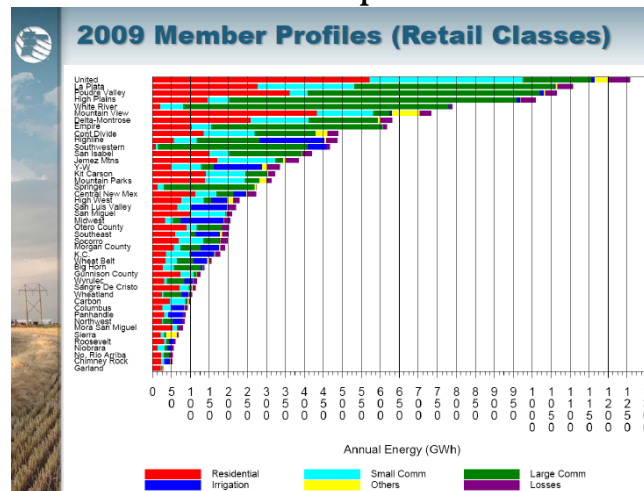
- Take a fresh and critical look at which generation resources will truly ensure the long-term affordability and accessibility of electricity in Tri-State's territory
- Provide more detailed accounting of fuel and power expenses in annual and quarterly reports provided to coop members
- Provide accurate information to coop members regarding trends in coal prices and the impacts of these prices on Tri-State rates.
- Provide accurate information to coop members about the life span of coal mines that support Tri-State's coal plants
- Provide accurate information to coop members about the costs of pollution controls for coal plants and the alternatives
- Recognize that power systems in the 21<sup>st</sup> century will likely become lower carbon, more distributed and designed around flexible generation that can accommodate increasing reliance on renewable energy resources.
- Help coop members recognize that in the 21<sup>st</sup> century, inflexible "base load" resources can interfere with adding cost-effective levels of free-

<sup>6</sup> Map of US geothermal resources from [http://www.nrel.gov/gis/images/geothermal\\_resource2009-final.jpg](http://www.nrel.gov/gis/images/geothermal_resource2009-final.jpg)

fuel renewable energy that are the key to affordable electricity moving forward

- Continue to gain more experience with adding renewable energy resources to Tri State’s system and provide accurate information to coop members about the long term cost savings potential of these technologies
- Begin to experiment with adding more storage capacity to Tri-State’s system to allow increasing reliance on renewable technologies
- Continue to encourage more energy efficiency and renewable energy programs by Tri-State member coops
- Implement policies to allow member coops to move above the 5% limit on self-generation in a step wise fashion.
- Revise Policies 115, 117 and 118 and adopt a pricing mechanism that encourages development of renewable energy technologies
- Develop a culture that encourages innovative thinking by Tri-State Board members and work to develop more diversity on the TSGT Board
- Consider a system that provides TSGT Board representation based on the size of the member coop so that the number of Board representatives from member coops is proportional to sales rather than having equal representation for all member coops.

### Tri-State Member Coop Size Distribution<sup>7</sup>



<sup>7</sup> For Tri-State member coop sizes, see Slide 41 in April 16, 2010 Powerpoint presentation available from <http://www.tristategt.org/ResourcePlanning/ResourcePlanDoc.cfm> This was the most recent publicly-available data on the size of member coops that could be found.