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**NISP-Glade Reservoir U.S. Army Corps of Engineers Draft EIS Comments**  
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**Statement**

In its April 2008 Draft Environmental Impact Statement, the Army Corps of Engineers fails to provide an adequate analysis of energy demands and greenhouse gas emissions associated with the Northern Integrated Supply Project. These critical impacts are integral to identifying the best alternative to future water supply needs in this region and should be studied and reported on prior to issuing a Final EIS.

Below we present a number of comments on the Draft EIS for the Northern Integrated Supply Project as they relate to energy impacts and greenhouse gas emissions.

**Energy and Water**

The “energy intensity” of water measures the energy used to pump, convey, treat, distribute, heat or cool, and pressurize potable water supplies, and to treat wastewater. In Table 4-15 of the Draft EIS, the Corps describes the energy required at one of these steps – conveyance. At build-out, assuming the project includes a pipeline from Glade Reservoir to Horsetooth Reservoir, annual energy demands will total 33,980 MWh.<sup>1</sup> If NISP delivers 40,000 AF, the anticipated firm yield, the energy intensity of this water will be 850 kWh/AF.

NISP project participants have many significant opportunities to reduce energy demands and intensity by conserving water and by expanding existing conservation programs and investing in new programs. It is important to note that water conservation has both a net water savings *and* a net energy savings. Water saved by the end user reduces the need to pump, treat, and distribute drinking water supplies and to treat and discharge wastewater. Energy savings resulting from water conservation can be great. Using the Glade to Horsetooth pipeline example, each acre-foot of water conserved by a consumer will save approximately 850 kWh of electricity. Additionally, avoiding the treatment and subsequent distribution of this water also provides an energy savings. FCSG is not in a position to assess the possible savings scenario, but others commenting on the draft EIS may be able to lend this expertise in a more fully expressed example.

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<sup>1</sup> Draft EIS, Table 4-15, p. 4-97.

But let's look at a regional example. We talked with some local water treatment and wastewater experts for advice and used data from Denver. In 2007, Denver water supply operations used approximately 91 kWh/AF to treat raw water to potable standards and 141 kWh/AF to distribute treated water supplies. Assuming NISP participant cities would have a net per AF energy use similar to Denver's, the total energy savings accrued by saving water could be significant when adding these three values (~1,080 kWh/AF). Considering the amount of water that might be pumped from Glade reservoir, the total energy saved is significant — not counting the assumed water treatment and delivery costs of 231 kWh/AF.

***Importantly, these savings and the associated avoided costs were not considered in the Draft EIS. FCSG requests that the Corps revise its No Action Alternative to include stronger water and energy conservation measures.***

### **Electric Power Requirements and Sources**

The power generated to supply NISP will likely come from conventional coal fired power plants due to the power generating mix in the region. To supply the anticipated 33,980<sup>2</sup> MWh per year, NISP would require an additional generating capacity of approximately 5 megawatts<sup>3</sup>. The energy demands similar to a large industrial power load. This new power will cause additional air pollution and greenhouse gas emissions.

Electricity production from all sources in the US average and 1,515 pounds of CO<sub>2</sub> per delivered MWh. But for coal, the emissions factor is approximately 2,000 lbs per MWh. At this emissions factor and with an national average annual 4 million MWh/year power plant output, the average US coal-fired power plant will emit 4 million US tons of CO<sub>2</sub> per year.<sup>4</sup>

In addition to not considering the direct increase in CO<sub>2</sub> and other emissions caused by NISP's 33,980 MWh/year increased demand, the Draft EIS also does not consider any indirect emission increases due to construction and long term operation of the project.

Additions to the water supply in the southern area of the Front Range that NISP will service will most likely increase urban development — as much of NISP's water is intended to serve future growth. This NISP-spurred growth is real. So are the emissions created from this growth.

***Prior to issuing a Final EIS, supplemental or revised EIS, the Corps should ensure that all indirect emissions increases — both air pollution and CO<sub>2</sub> emissions — associated with NISP-spurred growth are included.***

Now on to Glade Reservoir. As envisioned, Glade, too, will add air pollution and GHG emissions. How do we come to this conclusion? The Glade Forebay pumping station will most likely receive electricity from Poudre Valley REA. Poudre Valley REA, being an REA without any direct generating capacity, receives its power from Tri-State Generation and Transmission (Tri-State, based in Thornton, CO). Since Tri-State relies heavily on coal, Tri-State electricity has a more substantial carbon footprint than the

<sup>2</sup> Army Corp of Engineers Draft EIS, Table 4-15, p. 4-97.

<sup>3</sup> US EPA E-Grid states the average coal-fired power plant has a capacity of 600 MW but operates at ~75% capacity, resulting in 4 million MWh/year. The NISP power demand was based upon this.

<sup>4</sup> US EPA E-Grid (<http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html>)

national average.<sup>5</sup> Thus, the nature of the source of electricity used for Glade Reservoir (for construction, operation or maintenance) will impact the overall greenhouse gas emissions generated by the project.

Another issue is the Glade Phase II Alternatives Analysis. The arrangement of forebays and pumping systems are discussed: the forebays have extra storage capacity to allow the pumps to operate during off-peak hours, taking advantage of reduced off-peak electricity price rates. But off peak power is typically generated by coal-fired power plants as they run in “baseload” mode. This unfortunate convergence will further increase the carbon footprint of NISP.

***We request that the DRAFT EIS consider methods to alleviate the reliance on off-peak higher carbon footprint electricity, and also review the use of renewable sources of energy like solar photovoltaics or wind energy to reduce the carbon output directly attributable to the larger forebays.***

***In order to consider renewable of energy (RE) use, the Draft EIS should also include considerations and calculations relative to the amount of renewable energy needed, the level of reliability and intermittency that might be tolerated, the cost of renewables, the potential mix of RE, such as solar, wind, or other sources.***

### **Greenhouse Gas Emissions**

In general, the Draft EIS is distinctly silent on greenhouse gas (GHG) emissions generated by NISP. Although we understand that the NISP pumping plants will purchase electricity from utilities, in our opinion, the project proponents are still directly (or at a minimum indirectly) responsible for the project’s GHG emissions. The GHG emissions associated with NISP will depend on the source of the electricity.

The Corps predicts that NISP will purchase electricity through a long-term contract with electricity providers and then rely on off-peak power. As previously stated, in Colorado, most if not all, off-peak power is generated by coal-fired power plants. The GHG intensity of electricity purchased from a coal plant is approximately 1 metric ton/MWh. Thus, if NISP relies solely on power generated at coal plants, it would be responsible for almost 35,000 metric tons of CO<sub>2</sub> each year. There is no mitigation in place for this additional GHG generation.

Both Governor Ritter and Boulder County (location of three NISP participant cities) have developed climate action plans.<sup>6</sup> Governor Ritter’s plan sets a goal of reducing Colorado’s greenhouse gas emissions to 20% below 2005 levels by 2020. Increasing energy demand by 34,000 MWh annually makes these climate goals more difficult. Thus, NISP generated CO<sub>2</sub> emissions will have a direct impact on the adopted Colorado Climate Action Plan (CCAP). The CCAP addresses future total GHG growth. NISP-induced growth will increase both the total and per capita GHG emissions due to increased electric power demand and the subsequent construction of power plants (likely new coal-fired) to meet this demand. NISP-spurred urban development will also have increased GHG emissions.

In the opinion of FCSG and others, the CCAP is an achievable program. Many people had a hand in its creation. The impact of NISP on this plan is real. We would expect that consideration of the CCAP would be given in any analysis of a major project in Colorado, public or private. An analysis of the capability of

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<sup>5</sup> US EPA E-Grid

<sup>6</sup> See Ritter, 2007, *Colorado Climate Action Plan*, [http://www.colorado.gov/energy/in/uploaded\\_pdf/ColoradoClimateActionPlan\\_001.pdf](http://www.colorado.gov/energy/in/uploaded_pdf/ColoradoClimateActionPlan_001.pdf); and the Boulder County Sustainability website, <http://www.bouldercounty.org/sustain/energy/index.htm>.

renewable energy sources to allow NISP to achieve carbon neutrality (and thus, have limited to no impact on the Colorado Climate Action Plan) is critical.

***In order to be consistent with the Colorado Climate Action Plan, NISP should attain carbon neutrality. We strongly believe, that prior to issuing a Final EIS, the Corps should clearly address the impacts of NISP on the future outcomes of the Colorado Climate Action Plan.***

**Further Recommendations and Requests**

- 1) As planned, NISP will increase the energy demands and carbon footprint of project participants. The water sector has been identified as one of the most vulnerable sectors to climate change. Given this vulnerability, water utilities should seek to reduce their carbon footprint.
- 2) In any final EIS, the Northern Colorado Water Conservancy District should be required to develop a realistic, feasible, and implementable plan for offsetting all carbon emissions associated with NISP.
- 3) Include an analysis of the GHG emissions impact of NISP-spurred growth.
- 4) In any preferred alternative, minimizing energy-intensive components should be required.
- 5) Achieve carbon neutrality for NISP-induced energy demands by using renewable sources of energy:
  - a. Power NISP pumping stations with solar photovoltaics.
  - b. Power NISP pumping stations directly with concentrating solar thermal electrical power.
  - c. Power NISP pumping stations with wind energy.
- 6) Other carbon neutrality avenues for NISP are:
  - a. Purchasing Excel Windsource (renewable energy credits) RECs.
  - b. Purchase other certified renewable energy credits.
  - c. Invest in other certified carbon offset programs.