LOVELAND UTILITIES COMMISSION
REGULAR MEETING
December 17, 2014 - 4:00 p.m.

Service Center Board Room
200 North Wilson Avenue

AGENDA

4:00 pm - **CALL TO ORDER**

4:05 pm - **APPROVAL OF MINUTES – 11/12/2014 and 11/19/2014**
NEW EMPLOYEE INTRODUCTION – Kyle Hogue, Cameron Jacobs and Sean Hergenreter

CITIZENS REPORTS

Anyone in the audience may address the LUC on any topic relevant to the commission. If the topic is an item on the Consent Agenda, please ask for that item to be removed from the Consent Agenda. Items pulled will be heard at the beginning of the Regular Agenda. Members of the public will be given an opportunity to speak to any item on the Regular Agenda during the Regular Agenda portion of the meeting before the LUC acts upon it. If the topic is an item on the Staff Report, members of the public should address the Commission during this portion of the meeting as no public comment is accepted during the Staff Report portion of the meeting.

Anyone making comment during any portion of tonight's meeting should identify himself or herself and be recognized by the LUC chairman. Please do not interrupt other speakers. Side conversations should be moved outside the Service Center Board Room. Please limit comments to no more than three minutes.

4:10 pm - **CONSENT AGENDA**

1. Award contract for the 2015 CIPP Sewer Rehabilitation Project – Craig Weinland
2. 2015 Service Contract for Liquid Waste Management for Hauling & Land Application of Biosolids – Michael McCrary

4:20 pm - **REGULAR AGENDA**

3. FEMA Alternate Project Update – Gretchen Stanford & Brieana Reed-Harmel

5:20 pm - **STAFF REPORT**

4. PRPA Solar and Integrated Resource Plan Update – Brad Decker and John Bleem

The City of Loveland is committed to providing an equal opportunity for citizens and does not discriminate on the basis of disability, race, age, color, national origin, religion, sexual orientation or gender. The City will make reasonable accommodations for citizens in accordance with the Americans with Disabilities Act. For more information, please contact the City's ADA Coordinator at bettie.greenberg@cityofloveland.org or 970-962-3319.

The password to the public access wireless network (colguest) is accesswifi.

LOVELAND UTILITIES COMMISSION
REGULAR MEETING
December 17, 2014 - 4:00 p.m.

6:00 pm - 5. **COMMISSION / COUNCIL REPORTS**

- The Colorado Water Congress and the Colorado Foundation for Water Education (CFWE) Webinar Series on Transbasin Diversions: Profiling a Colorado Transbasin Diversion - December 10, 2014
- City Council Study Session: City Council and Planning Commission Joint Meeting Create Loveland Update – December 9, 2014

6:15 pm - 6. **DIRECTOR'S REPORT** – Separate Document

6:30 pm - **INFORMATION ITEMS**

7. Financial Report Update – Jim Lees

7:00 pm - **ADJOURN**

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The password to the public access wireless network (colguest) is accesswifi.

Commission Members Present: Dan Herlihey, David Schneider (Vice Chair), Gary Hausman, Gene Packer (Vice Chair), Larry Roos, Jennifer Gramling, John Rust Jr., Randy Williams

City Staff Members: Allison Prokop, Chris Matkins, Colleen Cameron, Greg Dewey, Gretchen Stanford, Lindsey Bashline, Larry Howard, Roger Berg, Steve Adams, Tracey Hewson

Guest Attendance: Anita Marchant

CALL TO ORDER: Gene Packer called the meeting to order at 4:07 pm.

STAFF REPORTS

Item 1: Water Resource Training 101 Review – Greg Dewey This item will provide an overview of information that was requested during the October 8, 2014 Water Resource Training 101 session.

Staff Report only. No action required.

Item 2: Water Resource Training 102 – Greg Dewey This item will provide an overview of the Raw Water Master Plan, the Landscape Hydrozone Program, the Loveland Storage Reservoir Project, the Second Use Water Program Development Study (purple pipe), Downstream Storage, Waters of The United States, the Public Trust Doctrine and other discussion items relating to future water resources.

The following links are to information on the topics that will be discussed at the November 12, 2014 Water Resource Training Session:

- For the complete copy of the 2012 Raw Water Master Plan visit: http://www.ci.loveland.co.us/modules/showdocument.aspx?documentid=7725
- News Article, *Senators want EPA, Corps to Withdraw Proposed "Waters of the Unites States" Rule,* Public Power Daily. For full article visit: http://www.publicpower.org/media/daily/ArticleDetail.cfm?ItemNumber=42509
- For more information about the Public Trust Doctrine visit: http://cowaterstewardship.com/
- For more information on the Colorado Water Plan visit: http://www.coloradowaterplan.com/

Staff Report only. No action required.

Comments: Discussion ensued between LUC board members and staff regarding the Raw Water Master Plan, the Landscape Hydrozone Program, the Loveland Storage Reservoir Project, the Second Use Water Program Development Study (purple pipe), Downstream Storage, Waters of The United States, the Public Trust Doctrine, the future water resources, and other topics.

ADJOURN The meeting was adjourned at 5:33 pm. The next LUC Meeting will be November 19, 2014 at 4:00 pm.

Respectfully submitted,

Allison Prokop
Recording Secretary
Loveland Utilities Commission

Commission Members Present: Anita Marchant, David Schneider (Vice Chair), Gary Hausman, Gene Packer (Vice Chair), Larry Roos, Jennifer Gramling, John Matis, John Rust Jr., Randy Williams.

City Staff Members: Allison Prokop, Bob Miller, Gretchen Stanford, Jim Lees, Kathleen Porter, Larry Howard, Michelle Stalker, Moses Garcia, Nick Marusin, Roger Berg, Ruth Hecker, Steve Adams, Scott Dickmeyer.

Guest Attendance: Craig Seager, Debby Meyers, Donna Meaders, Edward J. Lacy, Ethel Meininger, Greg Hill, John Meaders, John Weins, Justin Newhall, Larry Sarner, Larry Wallace, Linda Rosa, Lou Gerken, William Bailey.

CALL TO ORDER: Gene Packer called the meeting to order at 4:01 pm.

APPROVAL OF MINUTES: Gene Packer asked for a motion to approve the minutes of the October 8, 2014 meeting.

Motion: Dave Schneider made the motion to approve the minutes of the October 8, 2014 meeting.
Second: John Rust Jr. seconded the motion. Anita Merchant abstained from the vote. The minutes were by all other board members present.

Gene Packer asked for a motion to approve the minutes of the October 15, 2014 meeting.
Motion: Dave Schneider made the motion to approve the minutes of the October 15, 2014 meeting.
Second: John Rust Jr. seconded the motion. Anita Merchant abstained from the vote. The minutes were by all other board members present.

REGULAR AGENDA

Item 1: LUC Recommendation on the Level to Fluoridate Loveland's Drinking Water – Chris Matkins
This item is to summarize steps taken to receive community input on water fluoridation, review where to access fluoridation information received, review fluoride target level guidelines from the State of Colorado and request policy guidance from the LUC.

Recommendation:
After careful consideration of staff and public input:

a. Provide a recommendation to the Director of Water and Power on whether or not to continue fluoridating the City of Loveland's Drinking Water in accordance with the direction provided by City Council in 1952 to set amounts in accordance with health and dental authorities.
b. Provide input or comments relevant to the Water and Power Director's decision on fluoridation levels as recommended by local health and dental authorities, including the Colorado Department of Public Health and Environment.

Comments from LUC board and staff: Scott Dickmeyer presented this information. Gary Hausman asked Dickmeyer how much fluoride costs Loveland Water and Power (LWP) annually. Dickmeyer stated that the annual cost is approximately $30,000 for standard maintenance and chemical cost, this will be changing to fluorosilic acid. Packer asked staff to clarify the timeframe in which Loveland Water and Power (LWP) had been running between 0.7 parts per million (ppm) and 0.9 ppm. Dickmeyer stated that LWP has been within the targeted rage since mid-June 2014. Larry Roos asked what steps have been taken in order to improve communication moving forward to notify the public and LUC board members when fluoride levels fall outside the recommended range. Dickmeyer stated that LWP is currently working on a Communication Plan; he reassured the board that the issue has been resolved since mid-June 2014. Dickmeyer summarized the information in Attachment A: Email communication with the Colorado Department Public Health and Environment (CDPHE). He reviewed the compliance

regulations stated on Attachment A and reported on protocol for the future Communication Plan. Dickmeyer stated that he cannot guarantee that there will not be any maintenance issues that may affect optimum fluoridation levels, but if there is a long-term fluoride outage, LWP will notify the public.

Packer asked for more explanation on the new measuring equipment that tracks fluoridation levels that were recently installed at the Water Treatment Plant (WTP). Dickmeyer mentioned the new online analyzer for fluoride uses an ion selective electrode technology which constantly reads the amount of electrons in the water and reports it to the WTP control system. This information is recorded every fifteen minutes and is used to track any fluctuations in fluoride levels. The analyzer is connected to an alarm that will notify operators if levels are above or below the target levels.

Comments from public comment:

John Meaders lives at 754 Scotch Elm Dr. in Loveland. He is a Loveland Water Utility customer. He stated that since January 2012 many communities around the world have removed fluoride from drinking water. He read a list of communities who do not fluoridate their drinking water. He stated that Loveland should follow suit. He thinks there should be an investigation into why all these communities are removing fluoride from drinking water. He mentioned that he would like a choice on whether or not to add fluoride to Loveland's drinking water and stated that he does not want fluoride in the drinking water.

William Bailey, he did not provide his current address. He is a professor at the School of Dental Medicine at the University of Colorado. He is not a Loveland Water Utility customer. He discussed his credentials. He stated that in regards to Meaders comments that 75% of people on public water supply are fluoridating, in Australia it is about 90%. During 2000 – 2012, 48 million new users are fluoridating their drinking water that is about 6% of the population. Some small cities are choosing to remove fluoride from drinking water, but overall the numbers are increasing. He mentioned the letter he wrote to the commission that highlighted his thoughts on fluoride in drinking water and that no association exists between community water fluoridation and kidney disease.

Linda Rosa is a Loveland Water Utility customer who lives at 711 W. 9th Street in Loveland. She is a registered nurse in Loveland. She is also the Executive Director at Institute of Science and Medicine. She stated that she helped create the organizations policy on fluoridation. She said that they are in support of fluoridation in safe doses. As a customer she urges the commission to continue fluoridating at 0.9 ppm or higher. Should Health and Human Services (HHS) change their recommendation she believes it when then be appropriate for the City to follow suit and lower the target.

Craig Seager lives at 5974 Snowy Plover Ct. in Fort Collins. He is not a Loveland Water Utility customer but, he is a dentist in Loveland and the president of Larimer County Dental Society. He stated that he is a fluoride advocate and believes that fluoride is a benefit to everyone and is a great socioeconomic benefit. He handed out a petition from Larimer County dentists that states that they believe that LWP should rely on experts and follow their advice on using 0.9 ppm.

Ethel Meininger lives at 2874 Chickadee in Loveland and is not a Loveland Water Utility customer. She discussed her work with the researchers to help with the NIH Grant and initial research on fluoride. She summarized information he provided to the LUC at the September 30, 2014 special meeting on fluoride. She stated that teeth are the only calcified bone in the body that is not covered with muscle, and that there was no fluorosis seen in the teeth where fluoride was added to the water until fluoride was added in toothpaste. She discussed the benefits of fluoride in drinking water for adults and added that new research shows that fluoride helps remove bacteria from teeth in adults. Discussed other research that showed that bone loss was less in those people who were drinking fluoridated water. She expressed her support for fluoridation in the City's drinking water.

Debby Meyers lives at 1106 SW 23rd St, and she did not mention if she was a Loveland Water Utility Customer. She mentioned that she was representing the Northern Colorado Dental Hygiene Society and the Colorado Dental Hygiene Association. She stated they support the recommendation of 0.9 ppm and supports all research from the Colorado Department of Public Health and Environment (CDPHE). She stated that it is important to keep fluoride in the city water system.

Richard Branuim resides at 820 Scotch Elm Drive, and he did not mention if he was a Loveland Water Utility Customer. He stated that he would like the commission to reconsider fluoridation in the city's drinking water. He stated that he believes it is a poison in strong doses. He questioned why a city so close to Rocky National Park, that has such a pristine snow pack and pristine run off is putting poison into its water system. He advocated against the use of fluoride in the City's drinking water. He would like this issue to go before the community and voters.

Larry Sarner lives at 711 W 9th St, and he is a Loveland Water Utility Customer. He mentioned that he is a passionate advocate for the fluoridation of the City's water supply. He briefly reviewed the City's fluoridation history. He would like LWP to follow the recommendations from CDPHE and HHS and local dental authorities of dosing levels of 0.9 ppm. He thinks that even though there might be a change coming on the recommended optimal dosage level, LWP should not change dosing level targets at this point in time. He mentioned that the recommendation from CDPHE is taking much longer than expected. He would like to wait until scientific evidence proves if levels should potentially be modified. He believes that until then, LWP should make sure water is giving is the maximum protection through water fluoridation. He discussed that fluorosis is not a true medical problem and that LWP should not worry about it.

Comments from LUC board and staff:
Steve Adams mentioned the LWP received three e-mails since the commission's last meeting regarding fluoride. This information was distributed to the commission as handouts and copies were provided to any meeting attendees interested in having a copy. Adams clarified that Dr. Baily's e-mail is a response letter to Dr. Paul Connett's e-mail, and the third e-mail was given to LWP on Monday November 17, 2014 and came from James W. Reeves.

Adams asked that the Chairman open discussion on whether or not to continue fluoridating the City of Loveland's Drinking Water in accordance with the direction provided by City Council in 1952 to set amounts in accordance with health and dental authorities. Adams mentioned that he would like to discuss this item first and Part B of the recommendation next. Packer opened the discussion.

Randy Williams stated that after reviewing the information provided from LWP and state and local dental authorities, he feels persuaded that fluoride is a safe, beneficial and effective method of providing health for our citizens. He stated that he sees no reason why the LUC would recommend for City Council to reconsider its existing policy. He would like to continue with the existing policy. He feels it is up the Water and Power Director to use his expertise and knowledge to decide what levels are fed.

Gary Hausman stated that he agreed with Williams. John Rust Jr. mentioned that he too agrees with Williams and would like to continue adding fluoride to the city's water supply. Jennifer Gramling stated that she also agrees with Williams and believes that the research shows support for continuation to fluoridate the City's drinking water. Schneider expressed that he respects the disagreements given by citizens, but believes by fluoridating we are doing the most good for the most people. He thinks this is a good economical way to benefit the citizens of Loveland. He mentioned that research shows that the motivations of other cities and countries that remove fluoride from water is due to using fluoride in salt and other mechanisms. He stated that he is not hearing that fluoride is being eliminated from general

public communities. He said that he supports the fluoridation of Loveland's drinking water. Roos stated that after his analysis he supports continuing of fluoridation in the City's drinking water.

Packer stated that he votes to continue fluoridation in the City's drinking water because of recommendations from dental authorities, CDPHE, HHS and public health representatives.

Gene Packer asked for a motion to approve Item 1 Part A.
Motion: Dave Schneider made the motion to approve Item 1 Part A.
Second: Jennifer Gramling seconded the motion. Anita Merchant abstained from the vote. Item 1 Part A was approved unanimously by all other board members present.

Adams transitioned into Part B of Item 1. He reviewed the municipal code Chapter 2.9 section 2.49.010. He said he would like to use this authority to make a decision on what levels will be dosed moving forward. He stated that he will use this authority to determine fluoride levels for the City of Loveland's drinking water. He mentioned that he is not seeking a vote on a specific fluoridation level, but would like the LUC's input about where LWP goes with fluoride levels and factors he should consider in setting this level. Adams will then take into consideration from others and develop a two-step process. The first step is to determine the near term fluoridation level for the City's WTP. The second step for the long term is to determine a fluoridation level once EPA, HHC and CDPHE issue a final ruling on their work on fluoridation levels. Adams stated that after reviewing all information, he will be making a decision and conveying this information via public information outlets and City Council by the first week of December.

Merchant commented that Adams should consider the scientific research expressed from CDC and CDPHE. Williams stated that it is within Adam's discretion to decide on any fluoride level within the recommended range from CDPHE. Hausman stated he believes that LWP should continue going with the state recommendation. Rust stated that LWP should continue feeding the same level that is currently being fed until such time as a new recommendation from officials is given. Gramling agreed with other board members. Schneider stated that he agrees, and is glad that moving forward and that LWP is going to communicate any changes in fluoride levels to the public. He said that he is in support of the Water and Power Directors' decision. Roos stated his recommendation is to fluoridate at 0.9 ppm based on CDPHE recommendations. Packer read from the Attachment A for Item 1, and he stated that he has confidence in staff to make a decision on exact dosing levels and believes that LWP will get more information from CHPHE in the future.

Item 2: River Crossings Replacement Project Contract Approval – Tanner Randall
For the Water and Power Department when a construction bid exceeds $500,000, by the City's Municipal Code a contract above this threshold can be approved by the LUC. The City Council can also approve construction contracts above $500,000. When contract approval occurs by the LUC in most circumstances a recommendation is made for the City Manager to also sign the construction contract.

Recommendation: Adopt a motion awarding the River Crossings Replacement Project (FLW07C) construction contract to Layne Heavy Civil in the amount of $1,351,836 and allow the City Manager to sign the construction contract.

Motion: Dave Schneider made the motion.
Second: Gary Hausman seconded the motion. The motion was approved unanimously.

Comments: Item 2 was pulled from the consent agenda by Steve Adams.

Steve Adams said that he would like to pull this item and provide the board with updated materials to review. The updated materials for this item included:

- Attachment A - Opinion of Probable Cost
- Attachment B - Bid Summary Sheet

Randy Williams asked Adams for clarification on when LUC was given authority to approve contracts above $500,000. Adams stated that the ordinance states that if an item is less than $500,000 the City Manager can approve it. If the item is between $250,000 - $499,999 the Director of Water and Power can approve it and, if it is over $500,000 the City Council can approve it, and the LUC can also approve items provided that the funds are budgeted properly.

Item 4: Annual Approval of Directional Bore Bid – Kathleen Porter
For the Water and Power Department when a construction bid exceeds $500,000, by the City's Municipal Code a contract above this threshold can be approved by the LUC. The City Council can also approve construction contracts above $500,000. When contract approval occurs by the LUC in most circumstances a recommendation is made for the City Manager to also sign the construction contract.

The Department of Water & Power reviewed the Annual Power Directional Bore Bid. The directional bore bid allows contractor augmentation of City crew efforts to install underground conduit systems, street light wires, streetlights and vaults. After consideration of the excellent work being done by our current contractor during 2014 and prior years, and the fact that the contractor was the sole bidder for 2015, and that the unit prices offered were quite reasonable when compared to last year's prices, the decision was made to recommend awarding this bid to Jacobs Investments, LLC, dba Colorado Boring, Company.

Recommendation: Adopt a motion awarding the annual Directional Bore Bid to Jacob Investments, LLC, dba, Colorado Boring, Company in the amount of $1,000,000, and authorizing the City Manager to sign the contract on behalf of the City.

Motion: Gary Hausman made the motion.
Second: Dave Schneider seconded the motion. The motion was approved unanimously.

Comments: Item 4 was pulled from the consent agenda by Steve Adams. Adams mentioned that board members were given a copy of the correct agenda item. He informed the board that the contract will be awarded to Jacobs Investments, LLC, dba Colorado Boring, Company not G.E. Construction, he apologized for this mistake. Staff and board briefly discussed the time in which LWP has worked with Jacobs Investments, LLC, dba Colorado Boring, Company on this project in years past.

CONSENT AGENDA

Item 3: Annual Approval of Sub-Structure Bid – Kathleen Porter
For the Water and Power Department when a construction bid exceeds $500,000, by the City's Municipal Code a contract above this threshold can be approved by the LUC. The City Council can also approve construction contracts above $500,000. When contract approval occurs by the LUC in most circumstances a recommendation is made for the City Manager to also sign the construction contract.

Recommendation: Adopt a motion awarding the annual substructure contract to G.E. Construction in the amount of $1,000,000, and authorizing the City Manager to sign the contract on behalf of the City.

Motion: Gary Hausman made the motion.
Second: Anita Merchant seconded the motion. The motion was approved unanimously.

STAFF REPORTS

Item 5: End of Year Water Supply Update – Larry Howard
The 2014 water year was exceptionally wet, ending with the most reservoir storage in above average conditions going into 2015. The extremely wet conditions throughout nearly all of the 2014 water year in Northern Colorado have resulted in the best possible scenario for the City's water supplies. Loveland's raw water supplies and the long-term outlook will be discussed.

Staff Report only. No action required.

Comments: Gary Hausman asked how the water from the Olympus Tunnel gets into the Charles Hanson Feeder Canal. Howard then provided an overview of this process. Hausman inquired about the length of the tunnel. Howard stated that he is not sure of the exact length, but thinks the two tunnels are over 5 miles long.

Randy Williams asked about the storage on the west slope and if that means Windy Gap Reservoir will spill. Howard stated that it is very likely that Windy Gap water will not be stored next year. Howard provided an overview of Windy Gap water and some of the benefits and issues with this water source. Staff and board discussed the benefit of Chimney Hollow and the potential of using this for storage.

Staff and board discussed water compacts, water law and water rights relating to Loveland Water and Power, Colorado, and surrounding states.

COMMISSION/COUNCIL REPORTS

Item 6: Commission/Council Reports
Activity board members attended since last meeting – October 15, 2014

- 25th Annual South Platte Forum in Longmont, CO – October 22–23, 2014
- Northern Water Fall 2014 Water Users Meeting in Fort Collins, CO - November 5, 2014
- Colorado Water Congress Workshop: History of Water Law in Denver, CO – November 19, 2014

Anita Merchant: none
Dave Schneider: He shared his thoughts on the CBT rate increases. He commended Larry Roos for attending the Colorado Water Congress Workshop: History of Water Law training. He mentioned that the South Platte Forum was very interesting and discussed details about the presentations from the Environmental Protection Agency (EPA). He highlighted topics discussed at the forum and expressed his opinions about the presentations, presenters and overall event dynamics.
Gene Packer: He mentioned that he the thought the South Platte Forum and the Northern Water Fall 2014 Water Users Meeting were informational and beneficial. He thanked LWP for the opportunity to attend these events.
Gary Hausman: He asked Larry Howard for more information about spilling at Green Ridge Glade. Howard stated that within the last moth water just lapped over the top. Previous to that there have been a few times when water has been just at the top of the spillway and the wind pushed water into the spillway, but there has never been a big amount running over the spillway.
Jennifer Gramling: none
John Rust Jr: none
Larry Roos: He discussed this thoughts on CBT rate increases and property tax increase projections.
Randy Williams: He added his thoughts about the recent election and the effects this may have moving forward.

Council Report: Steve Adams reviewed City Council activities related to the Water and Power Department since the last LUC meeting as summarized below:

Regular Meeting – October 21, 2014

- Nothing of interest to Water and Power Department

Special Meeting – October 28, 2014

- City Council adopted fee resolutions and ordinances to approve the 2015 Budget on Second Reading. This included the 2015 Schedule of Rates, Charges, and Fees for Services provided by the Water and Power Department.

Regular Meeting – November 4, 2014

- The City Council Approved and Intergovernmental Agreement (IGA) for mutual aid in the area of power operations between the Town of Estes Park, the Cities of Longmont, Fort Collins and Loveland and Platte River Power Authority.

Regular Meeting – November 18, 2014

- The City Council appointed Anita Marchant to the Loveland Utilities Commission for a partial term effective until June 30, 2015.

DIRECTOR'S REPORT

Item 7: Director's Report – Steve Adams

Comments: Schneider thanked staff for the follow up on the Hamilton Project.

INFORMATION ITEMS

Item 8: Financial Report Update – Jim Lees This item summarizes the monthly and year-to-date financials for October 2014.

Staff Report only. No action required.

ADJOURN The meeting was adjourned at 6:10 pm. The next LUC Meeting will be December 17, 2014 at 4:00 pm.

Respectfully submitted,

Allison Prokop
Recording Secretary
Loveland Utilities Commission

City of Loveland

CITY OF LOVELAND
WATER & POWER DEPARTMENT
200 North Wilson • Loveland, Colorado 80537
(970) 962-3000 • FAX (970) 962-3400 • TDD (970) 962-2620

RB for CW

AGENDA ITEM: 1
MEETING DATE: 12/17/2014
SUBMITTED BY: Craig Weinland, Construction Coordinator

TITLE: Award contract for the 2015 CIPP Sewer Rehabilitation Project

DESCRIPTION:
For the Water and Power Department when a construction bid exceeds $500,000, by the City's Municipal Code a contract above this threshold can be approved by the LUC. The City Council can also approve construction contracts above $500,000. When contract approval occurs by the LUC in most circumstances a recommendation is made for the City Manager to also sign the construction contract.

SUMMARY:
The purpose of this project is to rehabilitate aging sewer collection and sewer interceptor lines by lining the existing pipes with a cured in place liner (CIPP). The project includes lining 17,000 feet of small diameter clay lines (6", 8" & 10"), 2,770 feet of 21" reinforced concrete pipe (RCP), 4,195 feet of 30" RCP, and 270 feet of storm sewer (to be paid for by the Stormwater Enterprise).

Bids were opened on Thursday, December 11, 2015 (see attached tabulation of bids for a detailed breakdown). The bid results are as follows:

Contractor	Bid Amount
Insituform Technologies, LLC	$1,117,562.20
Layne Inliner, LLC	$1,387,643.00

Staff's opinion of probable cost was $1,300,000. The 2014 budget includes $1,050,000 for this project and the 2015 budget includes an additional $400,000, therefore we have adequate funds budgeted for the work (total funds available = $1,450,000). If awarded, we will however be required to wait until January 2015 to sign the contact since we need to have all of the funds appropriated at the time of signing the contract.

RECOMMENDATION:
Adopt a motion to award the 2015 CIPP Sewer Rehabilitation Project (W1401G) construction contract to Insituform Technologies, LLC in the amount of $1,117,562.20 and allow the City Manager to sign the construction contract.

REVIEWED BY DIRECTOR: AP for SA

ATTACHMENTS:
- Attachment A: Tabulation of Bids

Attachment A

BIDS RECEIVED: Thursday, December 11, 2014 @ 2:00PM
PROJECT NAME: 2015 CIPP Sewer Rehabilitation (W1401G)
BID NUMBER: 2014-72
BIDS TABULATED BY: Michelle Stalker
BIDS CHECKED BY: Roger Berg

City of Loveland

NAME OF BIDDER				Insituform Technologies, LLC		Layne Inliner, LLC	
BIDDER'S CONTACT INFORMATION				Joann Smith Contracting & Attesting Officer 17988 Edison Avenue Chesterfield, MO 63005 636-530-8000 (phone) 636-530-0751 (fax)		Mark Slack District Manager 7915 Cherrywood Loop Kiowa, CO 80117 303-646-1200 (phone) 303-646-1522 (fax) mark.slack@layne.com	
ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT COST	EXTENDED COST	UNIT COST	EXTENDED COST
1.	Mobilization	1	LS	$34,990.00	$34,990.00	$35,000.00	$35,000.00
2.	30" CIPP - Sanitary Sewer	4195	LF	$94.40	$396,008.00	$100.00	$419,500.00
3.	30" Cleaning and Video	4,195	LF	$4.80	$20,136.00	$9.00	$37,755.00
4.	24" CIPP - Storm Sewer	158	LF	$109.60	$17,316.80	$90.00	$14,220.00
5.	24" Cleaning and Video	158	LF	$4.80	$758.40	$9.00	$1,422.00
6.	21" CIPP - Sanitary Sewer	2,772	LF	$64.00	$177,408.00	$70.00	$194,040.00
7.	21" Cleaning and Video	2,772	LF	$4.20	$11,642.40	$9.00	$24,948.00
8.	18' CIPP - Storm Sewer	120	LF	$129.30	$15,516.00	$95.00	$11,400.00
9.	18" Cleaning and Video	120	LF	$4.20	$504.00	$9.00	$1,080.00
10.	10" CIPP - Sanitary Sewer	817	LF	$23.30	$19,036.10	$30.00	$24,510.00
11.	10" Cleaning and Video	817	LF	$1.70	$1,388.90	$3.00	$2,451.00
12.	8" CIPP - Sanitary Sewer	14,656	LF	$16.10	$235,961.60	$19.00	$278,464.00
13.	8" Cleaning and Video	14,656	LF	$1.70	$24,915.20	$3.00	$43,968.00
14.	6" CIPP - Sanitary Sewer	2,128	LF	$21.90	$46,603.20	$22.00	$46,816.00
15.	6" Cleaning and Video	2,128	LF	$1.70	$3,617.60	$3.00	$6,384.00
16.	Sewer Service Reconnections	361	EA	$105.00	$37,905.00	$85.00	$30,685.00
17.	By-pass Pumping	1	LS	$61,625.00	$61,625.00	$182,000.00	$182,000.00
18.	Traffic Control	1	LS	$12,230.00	$12,230.00	$33,000.00	$33,000.00
			PROJECT TOTAL ($):		$1,117,562.20		$1,387,643.00
			MEET QUALIFCATONS (Y/N)=		Yes		Yes
			NOTES				

1

City of Loveland

CITY OF LOVELAND
WATER & POWER DEPARTMENT
200 North Wilson • Loveland, Colorado 80537
(970) 962-3000 • FAX (970) 962-3400 • TDD (970) 962-2620

AGENDA ITEM: 2
MEETING DATE: 12/17/2014
SUBMITTED BY: Michael McCrary, Wastewater Treatment Plant Manager AP for MM

TITLE: 2015 Service Contract for Liquid Waste Management for Hauling & Land Application of Biosolids

DESCRIPTION:
For the Water and Power Department when a construction bid exceeds $500,000, by the City's Municipal Code a contract above this threshold can be approved by the LUC. The City Council can also approve construction contracts above $500,000. When contract approval occurs by the LUC in most circumstances a recommendation is made for the City Manager to also sign the construction contract.

The not-to-exceed total in the new Liquid Waste Management (LWM) biosolids hauling contract for 2015 will be $601,300. Because this contract exceeds $500,000 LUC approval is needed to execute this contract. This administrative action is to provide for this approval.

SUMMARY:
One of the first stages of treatment at the Wastewater Treatment Plant is to remove easily settled solids from the incoming wastewater. These solids, known as Primary Sludge, are sent to the Anaerobic Digesters where a bacterial population removes the various organic compounds to a level acceptable to State and Federal Regulations. Anaerobic bacteria live in the absence of Oxygen. The Wastewater Treatment Plant also uses biological treatment to meet State and Federal limits of treatment in the downstream treatment process. In this process, known as Activated Sludge, populations of aerobic, or Oxygen dependent, bacteria digest the polluting constituents, removing them from the treated water. These bacterial populations grow as they use these constituents and a certain percentage has to be wasted out of the system to maintain the proper balance of bacteria to food (the constituents of the various pollutants). This Waste Activated Sludge population is thickened by Rotary Drum Thickeners to reduce sludge volume and enhance further treatment. The Thickened Activated Sludge is then sent to the same digesters where they too are treated by the anaerobic bacterial population until they reach a treatment level that meets State and Federal regulations. These treated solids are called Biosolids and are hauled to various agricultural fields where they are applied, again within regulations, in order to recycle the remaining nutrients and organic matter to enhance soil conditions. This contract is for LWM to provide the hauling and disposal services needed to maintain proper treatment at the Wastewater Treatment Plant.

The unit cost for hauling biosolids in 2014 was $0.0331/Gallon. A new bid request was issued for liquid biosolids hauling and disposal with a bid closing date of November 20, 2014. One bid was submitted. Liquid Waste submitted a cost of $.0376/gallon for 2015.

$601,300 was budgeted for biosolids disposal in 2015 in the desire to capture this expected increase in unit volume cost. This is the amount we are using as the not-to exceed amount in the 2015 Biosolids Disposal contract with Liquid Waste Management.

RECOMMENDATION:
Adopt a motion approving the 2015 Contract for Liquid Waste Management for Hauling and Land Application of Biosolids with a not-to-exceed contract price of $601,300 and authorizing the City Manager to execute the renewal for service contract.

REVIEWED BY DIRECTOR:
AP for SA

City of Loveland

CITY OF LOVELAND
WATER & POWER DEPARTMENT
200 North Wilson • Loveland, Colorado 80537
(970) 962-3000 • FAX (970) 962-3400 • TDD (970) 962-2620

AGENDA ITEM: 3
MEETING DATE: 12/17/2014
SUBMITTED BY: Gretchen Stanford, Customer Relations Manager AP for GS
Brieana Reed-Harmel, Senior Electrical Engineer BRH

TITLE: FEMA Alternate Project Update

DESCRIPTION:
On May 30, 2014, Loveland received confirmation that Federal Emergency Management Agency (FEMA) had determined the City was eligible to receive a subgrant of approximately $9.1 million for an alternate FEMA project to replace the Idylwilde Dam and Penstock facilities lost in the September 2013 Flood.

SUMMARY:
Due to the Idylwilde Hydroelectric Facility having suffered severe damage in the last two floods along the Big Thompson River, it was determined that the Idylwilde facility should not be rebuilt and the subgrant funds should be used on an alternate project. There were multiple projects identified as possible alternate projects and they included:

- Installation of solar at the following locations:
  - Value Plastics
  - City owned property near I-25 and Highway 402
  - Fort Collins/Loveland Airport
  - Larger solar facility at Loveland Water and Power owned property near Boedecker Lake
  - Smaller solar facility at Loveland Water and Power owned property near Boedecker Lake
- Improving the City's Fiber Optic Network
- Substations
  - Building a new substation near Boedecker Lake
  - Hardening the West Substation
- Installation of an in-line turbine at the Water Treatment Plant

Staff engaged the assistance of Owners Engineer, NEI Electric Power Engineering Inc, to evaluate the various projects from a technical perspective. Staff has also engaged Ryley Carlock & Applewhite (RCA) to provide legal guidance for the FEMA alternate project process. Additionally, staff evaluated the various projects from the standpoint of how it would benefit the entire community and the utility, the ability to complete the projects in the allotted time, the environmental constraints, and the legal requirements from FEMA. These projects have gone through an initial overview process with the City's Conceptual Review Team (CRT) to evaluate

the land use and special considerations for each site. The information from these evaluations is outlined in the staff report and additional attachments.

Staff believes that these four project options or a combination thereof, provide the best use of the subgrant while meeting the requirements and restrictions for the use of the funds:

- Construction of a new Boedecker Substation and the installation of a smaller solar facility on the Boedecker property
- Construction of a large solar facility on the Boedecker property
- Construction of a large solar facility on the Value Plastics property
- Construction of an in-line turbine at the Water Treatment Plant

RECOMMENDATION:

Provide comments and a recommendation to the Water and Power staff on which projects should be considered and presented to City Council for the alternate project.

REVIEWED BY DIRECTOR:

AP for SA

ATTACHMENTS:

- **Attachment A:** Staff Report on FEMA Alternate Project
- **Attachment B:** The "City of Loveland Water and Power FEMA Alternate Project Report" by NEI Electric Power Engineering Inc.
- **Attachment C:** Submittal Letter dated December 5, 2014, Preliminary Alternate Project Descriptions and Questions sent to Colorado Office of Emergency Management (COEM) and FEMA
- **Attachment D:** Responses from COEM and FEMA dated December 8, 2014
- **Attachment E:** Timeline – Project Options Evaluation for FEMA Alternate Project

Attachment A

Department of Water and Power
Service Center • 200 N. Wilson Avenue • Loveland, CO 80537
(970) 962-3000 • (970) 962-3400 Fax • (970) 962-2620 TDD
www.cityofloveland.org

TO: Loveland Utilities Commission

DATE: December 15, 2014

THROUGH: Steve Adams, Water and Power Director

FROM: Bob Miller, Power Operations Manager
Gretchen Stanford, Customer Relations Manager
Brieana Reed-Harmel, Senior Electrical Engineer
Kim O'Field, Technical Specialist
Darcy Hodge, Utility Financial/Rate Analyst
Tracy Turner-Naranjo, Environmental Compliance Administrator

RE: Staff Report on FEMA Alternate Project

Background

During the flood of the Big Thompson River in September 2013, the City of Loveland sustained significant damage to the Idylwilde hydroelectric facility. The Idylwilde Dam suffered damage to the super structure and the reservoir was completely filled in with silt, sediment and cobbles. Approximately 2,000 feet of the penstock that ran adjacent to the Big Thompson River was destroyed. The Power House was flooded which compromised the electrical equipment within the facility.

The Federal Emergengcy Management Agency (FEMA) estimated that the damage sustained to the Idylwylde Dam and the penstock was $9,068,018 and determined that the Power House was ineligible for FEMA reimbursement due to being covered by the City's insurance policy through CIRSA. On May 27, 2014, the City of Loveland was awarded by FEMA a fixed subgrant of $9,068,018 for damage sustained to the Idylwilde Dam and the penstock. On May 30, 2014, the City of Loveland accepted the subgrant and elected to participate in the FEMA Alternate Project Program. It had been determined that the hydroelectric facility should not be replaced since it had also sustained damage during the flood in 1976. This Alternate Project Program will allow the City to use 100% of the subgrant funds for an alternate project instead of repairing or replacing the Idylwilde facility.

Through the Request for Proposal (RFP) process the utility hired NEI Electric Power Engineering, Inc. as an Owner's Engineer to study several project options that could potentially be funded by the FEMA subgrant. The "City of Loveland Water and Power FEMA Alternate Project Report" by NEI evaluated and estimated project costs against the awarded subgrant amount along with how projects fit into the required federal regulations, potential benefits to the City and where possible payback periods for each project. The cost figures in the NEI report are estimates for project comparison purposes, the actual project costs and payback will be determined once the project scope has been determined and bids received.

FEMA Alternate Project Program

The FEMA regulations allow the subgrant funds to be used for an alternate project when rebuilding the damaged facility would not best serve public welfare. The program also allows for the funds to be used on more than one eligible project.

There are many restrictions for the use of the subgrant funds when electing to perform and alternate project. Included are the following restrictions:

- The alternate project must be pre-approved by the Colorado Office of Emergency Management (COEM) and Federal Emergency Management Agency (FEMA).
- The procurement process must comply with all state and federal procurement regulations including the Federal Acquisition Regulation (FAR).
- The alternate project must comply with all environmental and historical preservation laws, regulations and orders; including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act, which requires consultation with the State Historic Preservation Office (SHPO)
- The alternate project must be a permanent project that benefits the general public.
- The alternate project must be located in the declared disaster area.
- The City of Loveland must own and maintain responsibility for the facility.
- Subgrant funding cannot be used to provide ongoing operations and maintenance, leasing costs, placed in the general fund or used to pay debts.
- The alternate project must be completed within the specified timeframe.
- Costs of the alternate project which exceed the fixed subgrant amount are the responsibility of the City .

Timeline

Pursuant to FEMA regulations there are defined timelines within which alternate projects must be completed. Per FEMA regulations, technically the dealine for final project completion, including completion of construction and clost out is March 14, 2015. However, the FEMA rules allow the City to obtain a 30 month extension on project completion from the COEM. The City of Loveland expects to be granted the 30 month extension placing the deadline for completion of the alternate project on September 14, 2017.

Important COEM and FEMA dates for the project are:

- The disaster due to the flooding was declared on September 14, 2013.
- The deadline to submit the proposal for the alternate project to the State for approval by both the COEM and FEMA is January 14, 2015 which is 60 days prior to the deadline for approval.
- The dealine to obtain an extension from the State for completion of the project is eighteen months from the date of disaster declaration, or March 14, 2015.
- The deadline for approval by both the COEM and FEMA of the alternate project is eighteen months from the date of disaster declaration, or March 14, 2015. We note this is technically under the FEMA rules, the deadline for project completion; however, because we plan to obtain an extension from COEM, March 14, 2015 is in effect our deadline for project approval.
- With the 30 month time extension, the alternate project must be completed 48 months from the date of disaster declaration, or September 14, 2017.

See the attached timeline “Project Options Evaluation for FEMA Alternate Project” which provides information on important dates for the FEMA timeline as well as information on internal progress for various project option evaluations.

Projects Being Considered

After evaluating our Capital Improvement Plan, the 2014 Utility Customer Survey results and regulatory compliance, the electric utility identified several different project options for the use of the subgrant funding. The projects reviewed included:

- Installation of solar at the following locations:
    - Value Plastics
    - City owned property near I-25 and Highway 402
    - Fort Collins/Loveland Airport
    - Larger solar facility at Loveland Water and Power owned property near Boedecker Lake
    - Smaller solar facility at Loveland Water and Power owned property near Boedecker Lake
- Installation of an in-line turbine at the Water Treatment Plant
- Improving the City's Fiber Optic Network
- Substations
    - Building a new substation near Boedecker Lake
    - Hardening the West Substation

Solar Projects: The Idylwilde Hydroelectric facility had been providing the Loveland electric customers with clean, renewable, low cost electricity since it's original completion in 1925. After the second flood destroyed the facility, the utility determined that a good possible use of the subgrant funds might be to produce renewable energy from a source less prone to natural disasters in order to provide the same benefit to the rate payers. Solar was identified as a good option since it would produce more energy than was capable from the previous Idylwilde facility, it could be built in more locations than a new hydroelectric facility, it has no Federal Energy Regulatory Commission (FERC) licensing requirements, and it would help the utility reach the Renewable Energy Standards (RES) prior to being mandated to do so. The utility looked at several land options around the City of Loveland for possible solar installations for the subgrant. All these solar projects would connect directly to Loveland's electric distribution grid.

1) ***Solar at Value Plastics:*** The Value Plastics property is located adjacent to existing electrical infrastructure and an existing substation. This makes the site an ideal location for solar installation. Since this property is not owned by the City, the utility is currently pursuing a long term or permanent utility easement on the property to install the solar facility. This would be a one-time cost to the utility, to compensate Value Plastics for the loss of the use of the land. The identified potential location for a solar facility on this site is currently being used as a retention pond which may cause the site to be partially submerged during heavy rain events. This needs to be taken into consideration before the construction of the project. This site is located in the region between Loveland and Fort Collins where the two Cities have a development plan in place. Coordination will most likely be required by both Cities if this site is chosen for a solar facilitiy. This property does not need to be rezoned but will require a Special Review Application which will take approximately 3-5 months to complete. When compared to other potential solar sites this option may have a higher cost to construct solar due to the easement acquisition costs associated with it.

2) ***Solar at I-25 and Hwy 402:*** The City owns land near the intersection of Highway 402 and I-25 and was identified as a possible location for a solar facility. Within the long-term utility plan, this location has also been identified as a potential location for a new substation as growth continues in this portion of the City. One of the biggest challenges with this location is there is no existing electrical infrastructure in the area to connect the solar to Loveland's distribution system. The closest tie is approximately 3.5 miles from this site. Due to the need to obtain easements and the environmental and historical evaluations for the site as well as the linear distribution line that would be required for this alternate project, the ability to build this distribution line could cause the project to be delayed. Additionally, the cost to extend the distribution line to this site significantly increases the cost of this project and makes it more

expensive when compared to other land options. This land is currently zoned as E-Employement Center and would need to be rezoned and a new Conceptual Master Plan developed for the property in order to place a solar facility on the site. This would add to the timeline for completion of the project.

3) ***Solar at the Fort Collins/Loveland Airport:*** The Fort Collins Loveland Airport was identified as a possible location for a large scale solar facility due to proximity to existing electrical distribution infrastructure and Crossroads Substation. There are several solar projects that have been successfully completed at other airport locations throughout the country. However, one of the restrictions from the Federal Aviation Association (FAA) is that the land cannot be sold, it can only leased. The lease amount is defined in the FAA regulations. This makes the ongoing operations and maintenance costs of the site higher than other available sites. If this site is chosen as a solar option we will need to work closely with the FAA to follow all their requirements for placing solar at an airport site, one of which will be to go through an extensive sun evaluation to make sure the solar placement does not create any glare at the chosen site. This property does not need to be rezoned but will require a Special Review Application which will take approximately 3-5 months to complete. Due to this higher ongoing cost, this project option was not the top choice when compared with other solar location options.

4) ***Larger or Smaller Solar Facilities at the Boedecker property:*** Loveland Water and Power has recently purchased 29.75 acres of property near Boedecker Lake northeast of the intersection of County Road 21 and 14th Street. This property had previously been identified in the utility's long term plan as a location for a new substation to accommodate future growth. However, the property is much larger than what would be required for the substation, leaving close to 25 acres available for other purposes. The utility has looked at two different options for solar on this property:
    - ***a.*** Using the entire 25 aces for a solar facility and building the substation at a later date based on growth needs using other funds. There is existing electrical infrastructure on 14th Street to connect the solar facility to the City's electrical distribution system.
    - ***b.*** Using approximately 14 acres for a solar facility and reserving the remaining acreage for the development of a City owned park. The Parks Department has expressed interest in developing a park in this portion of the City and it would provide a buffer to the adjacent neighborhoods. The park would not be part of the alternate project.

    This site located outside the City limits so the utility will need to go through an annexation process prior to construction. The timeline to complete the annexation process would be approximately 6-8 months. Through the annexation process and subsequent special review process, public comments will be solicited from the citizens located near this site and mitigation may need to be done to alleviate any citizen concerns about placing a substation and solar facility at this location. This site was identified as the best option for construction of solar at this time due to the fact that the land is already owned by Loveland Water and Power.

Installation of an In-Line Turbine at the Water Treatment Plant: The installation of an in-line turbine at the Water Treatment Plant is a project that has been previously evaluated by the Water and Power Department. It was determined that this project should be considered as a possible use of the subgrant funds for the same reason that the utility looked at solar, it would replace a portion of the Idylwilde facility with a renewable source for the rate payers. The in-line turbine would require Federal Energy

Regulatory Commission (FERC) licensing. However, because of the size of the turbine and it would be installed in an existing pipeline, it qualifies for an expedited licensing program through the State of Colorado.

Compared to the energy generated from a solar project and what was generated by the Idylwilde facility which was 900 kW, the 275 kW amount of energy generated from the in-line turbine is significantly lower. Additional evaluation needs to include financial and operational impact of a turbine system that the Water Treatment Plant staff are not familiar with operating, Technical Services staff are not familiar with maintaining. Considering this, a third party operations and maintenance contract would most likely be needed. We will also need a risk assessment on the impact to the City's main water supply.

Improving the City's Fiber Optic Network: Additional fiber installed in the City of Loveland would provide long term benefits to the utility, other City departments and to the residents. However, this project was ultimately determined to not be a good use of the subgrant funds due to several factors.

Since much of the new fiber would be installed in areas where easements have not been obtained, the utility would need to aquire these easements. Easement acquisition can vary from a few months to a few years. In the past the utility has experienced complications in easement acquisition which have delayed capital improvement projects. Given the hard deadline for completion of the alternate project, these delays could cause the project to fail. Additionally, delays could be caused due to compliance requirements with NEPA.

In the future, the use of federal subgrant funds may limit the use of the fiber and may preclude the utility from using this infrastructure to develop a communications utility or allow commercial use of the fiber network. Additionally, in order for residents and businesses of Loveland to take advantage of this fiber, the City would be required to comply with Colorado State House Bill 152 by forming a communications utility.

The utility also determined that installing fiber at this time would be in advance of our actual needs. The utility would not realize a true benefit until infrastructure such as automated distribution equipment is in place.

Substations: The West Substation, situated north of the Big Thompson River on Namaqua road, was affected during the September 2013 flood. The Big Barnes Ditch runs along the upper bank immediately north of the West Substation. During the flood, water overtopped the Big Barnes Ditch and flooded the access road to the substation. Without access to the substation, the utility took the substation offline during the flood in order to mitigate damage in the event the ditch continued to fail. Also Big Thompson flood waters were within 15 feet of this facility even though it is located out of the 100 year flood plain, it is still within the 500 year flood plain.

For an alternate project option, the hardening of the ditch and the access road were evaluated to provide protection to West Substation. Ultimately it was determined that improvements to this site may not be cost effective. The West Substation is the oldest substation in the system and will need extensive upgrades when equipment is replaced. Design standards and requirements have changed since the original construction of the substation and the site is not large enough to easily accommodate the needed upgrades. In order to expand the West Substation, the utility would have to purchase land from adjacent owners. The utility cannot expand to the south due to the proximity of the floodplain and there is a limited amount of land to the east. Ultimately any expansion would not mitigate the threat from the ditch or the proximity to the floodplain. For several years, the utility has been evaluating alternate sites to build a new substation to eventually replace the West Substation, and putting significant amounts of money into a site that has existing vulnerabilities and may be replaced in the future is not a good use of the funds.

As part of the long term utility plan, the utility has identified several locations Citywide for new substations to accommodate future growth. Including:

- West side of town to replace West Substation
- Southwest portion of the Growth Management Area (Boedecker Substation accomplishes this)
- Southeast portion of the Growth Management Area (I-25 & 402 Substation accomplishes this)

The Boedecker property which was recently purchased by Loveland Water and Power had previously been identified in the long term utility plan as a good location for a new southwest substation. The property is ideal because it has existing transmission lines that run through the property. This substation could be used to provide additional capacity to the system reducing the critical nature of West Substation to the utility. Due to these benefits this project has been determined to be a good potential project for consideration.

Environmental

Any proposed project that FEMA provides funding for must undergo an environmental review pursuant to the National Environmental Policy Act (NEPA), unless NEPA provides an exclusion. There are two types of NEPA exclusions, a statutory exclusion (SE) or a categorical exclusion (CATEX). Statutory exclusions are usually tied to emergency response actions (i.e., coordination of disaster relief assistance, management or control of immediate threats to public health and safety, debris removal, etc.) or actions that substantially restore a facility at its original site as it existed before the major disaster or emergency. This will not apply to the FEMA Alternate Project Program. Categorical exclusions are categories of actions which have been determined by NEPA as typically having no significant environmental impact.

- ***SE (Statutory Exclusion):***
  - ✓ *is a specific action excluded from NEPA review*
  - ✓ *requires no formal documentation for the proposed action.*

- ***CATEX (Categorical Exclusion)***
  - ✓ *is an action that FEMA has found will not result in significant impacts to the environment*
  - ✓ *does not:*
    - o *induce significant impacts to planned growth or land use for the area,*
    - o *require the relocation of significant numbers of people;*
    - o *have a significant impact on any natural, cultural, recreational, historic or other resource;*
    - o *involve significant air, noise, or water quality impacts;*
    - o *have significant impacts on travel patterns;*
    - o *otherwise, either individually or cumulatively, have any significant environmental impacts*
  - ✓ *requires relatively simple documentation that the action fits one of the categorical exclusion categories defined in FEMA's environmental regulations*

If an SE or CATEX are not applicable, then NEPA requires that the project undergo a comprehensive environmental review prior to project construction in order to determine whether it would result in damage to the environment. There are two types of environmental reviews, an environmental assessment (EA) and an environmental impact statement (EIS). The primary difference between an EA and an EIS is the depth and breadth of analysis of the following key components:

- the purpose and need for the project;
- the alternatives to the project;

- the affected environment in which the project is to occur;
- environmental consequences of the project;
- and the mitigation of the impacts.

Each component must then consider whether there will be:

- significant impacts to planned growth or land use for the area;
- a requirement for relocation of significant numbers of people;
- a significant impact on any natural, cultural, recreational, historic or other resource;
- significant air, noise, or water quality impacts;
- significant impacts on travel patterns;
- and whether individually or cumulatively, the component have any significant environmental impacts.

The environmental review and analysis will require engagement with regulatory agencies such as the State Historic Preservation Office (SHPO), the Army Corps of Engineers (ACE), US Fish and Wildlife Service (USFWS) among others, and concurrence from a host of agencies (i.e., Native American Tribes, Larimer County, CDOT, etc.).

- **EA (Environmental Assessment)**
  - ✓ is a mechanism for determining whether the proposed project will have a significant impact on the quality of the human environment
  - ✓ can result in documentation and sufficient evidence to demonstrate NEPA compliance with the NEPA process
  - ✓ is a tool for determining whether to prepare an EIS
  - ✓ can take in excess of 10 months to complete

- **EIS (Environmental Impact Statement)**
  - ✓ is a detailed statement for federally funded projects significantly affecting the quality of the human environment
  - ✓ can result in documentation required for an EIS
  - ✓ is a compilation of the environmental impacts of the proposed project, reasonable alternatives to the proposed project, and a summary of the irreversible and irretrievable commitments of resources that would be involved in the proposed project
  - ✓ can take a minimum of 9 months to complete

NEPA compliance for all projects associated with the alternate project must be full and robust. The typical evaluation can take the better part of a year or more to complete, depending upon the level of review and documentation required. The consequences of not following the NEPA process include lawsuits (citizen suits, injunctions requiring immediate stoppage of work; time, money, and resources associated with attorney fees and court costs); project delays (review agency interventions, project re-design, rewrite of documents in appropriate form and content); denial of funding; and negative publicity. Each proposed project is in the process of being evaluated by an environmental consultant to determine the timeline and requirements associated with the NEPA process. Several projects have been determined to have a high risk of failing to comply with the deadline for project completion when the construction timeline and the environmental assessment timeline were considered.

Financial

The various project options were evaluated based on upfront construction costs, ongoing costs associated with the maintenance of the facility, benefits to the utility, its' customers and the City, and for the avoided purchased power costs over time.

If we were to build one of these power generating project options without the use of the FEMA money it might not make economic since due to the extended payback period. However, by using the fixed subgrant the payback period is very attractive. Unlike our wholesale costs from Platte River Power Authority (PRPA) shown below which are expected to increase 3.5% on average each year, the cost of generation for each of these projects will remain fixed for the life of the facility.

2015 PRPA Wholesale Rates

Season	***Energy Charge***	***Demand Charge***
Summer	$0.03943/kWh	$10.84/kW
Winter	$0.03783/kWh	$7.57/kW

Comparison of Generating Project Options

Site	***Generation System Type***	***Array Size (kW)***	***Electrical Energy Annually Generated (MWh)***	***Equivalent Cost of Generation Cents/kWh***	***Payback Period Total Cost (years)***	***Payback Period Loveland Cost (years)***
Value Plastics Solar Project	Solar: Fixed	3,550.00	141,116.60	$0.088	36	2
	Solar: 1-Axis	3,060.34	158,635.08	$0.082	30	2
I-25 and Hwy 402 Solar Project	Solar: Fixed	2,920.00	116,073.37	$0.112	47	9
	Solar: 1-Axis	2,517.24	130,482.94	$0.104	38	7
Airport Solar Project	Solar: Fixed	3,620.00	143,899.18	$0.121	61	14
	Solar: 1-Axis	3,120.69	161,763.09	$0.111	48	1
Larger Boedecker Solar Project	Solar: Fixed	3,289.47	130,760.38	$0.088	36	2
	Solar: 1-Axis	2,873.56	148,953.13	$0.082	30	2
Boedecker Solar Project	Solar: Fixed	1,840.00	73,142.12	$0.085	35	2
	Solar: 1-Axis	1,586.21	82,222.13	$0.080	29	2
In-Line Turbine	Hydroelectric	275.00	812.00	$0.111	38	1

****The output of the Idylwilde facility was 900 kW***

The 2015 Power 10 Year Financial Plan supports the $9.1M front-loading of costs by utilitzing funds from the Plant Investment Fee (PIF) revenue totaling $3.0M, General revenue generated through rates of $4.1M, and a loan from the Raw Water Fund of $2.0M to be repaid in full with interest by the year 2017. The State will be reimbursing the utility as invoices are submitted, evaluated and approved.

In addition, it is important the utility process the alternate project following federal grant regulations for reimbursement; this includes, but is not limited to, securing approval of the scope of work, working within federally established purchasing regulations, tracking all payroll, and completing a sealed bid process.

Green Benefits

There is something to be said for the fact that our customers have paid for the Idylwilde hydroelectric facility for 89 years and have been enjoying the benefits of renewable energy. It is important to ask, should we be providing the same benefit to our customers, what benefits does it provide to our system, what is the cost versus other energy resources and does it comply with State renewable energy requirements. What is our story? What is the story we want to tell from this alternate project?

If you compare the cost of solar to wind and large hydropower, solar has become a comparable renewable resource. In 2015 for summer rates, we will pay 3.9 cents per kWh for Tariff 1 renewables (wind and large hydropower) compared to a variable of 5.5 cents per kWh to 10 cents based on the solar prices that PRPA just received for installing 30 MWs of solar at Rawhide. Solar generation is more predictable than wind generation as wind is a volatile resource. Solar correlates with our peak and helps reduce risk and wind does not. There is no guarantee unlike solar, that large hydropower will continue to be available in the future. Renewables are a fixed or known energy price.

What are the green benefits to the utility as a whole? There are several factors to take into account including greenhouse gas reduction, renewable energy standards, climate, health, economy, and sustainability. Currently the utility does not need to comply with the Colorado State Renewable Energy Standard (RES) which states that utilities with more than 40,000 customers are expected to have 10% renewables by 2020. The utility currently serves 34,000 customers and is anticipated to reach the 40,000 customer threshold by 2021. However, in recent legislative sessions this mandate has come under annual legislative review. There is a possibility that the customer threshold for municipal utilities could be lowered and/or the percentage of renewables required could increase. With the 2015 wind farm addition to PRPA's generating sources, Loveland Water and Power currently has 8.19% of renewables that could count towards the RES. Each renewable project considered could increase Loveland's RES percentage by the amounts shown below.

Site Considered	Percent Increase to RES
Airport Solar	0.74%
Value Plastics Solar	0.73%
Larger Boedecker Solar	0.67%
I-25 & Hwy 402 Solar	0.60%
Smaller Boedecker Solar	0.38%
Hydroelectric Inline Turbine	0.11%

On December 11, 2014, PRPA's Board of Directors authorized PRPA's CEO, Jackie Sargent, to negotiate a contract for up to 30 MWs of solar at the Rawhide Energy Station that will be funded through Tariff 1. Loveland Water and Power would receive 23% of the total energy produced if and when the solar field is built and connected to the grid.

Idylwilde was grandfathered in as a City owned generating resource before PRPA was formed. Any generating resource the utility installs through the Alternate Project Program would also be considered grandfathered in regardless of the energy generated. This is important because the Purchased Power Agreement with PRPA states that Loveland cannot produce more than 1 MW or 1% of our distribution peak before paying a feed-in-tariff for the additional energy produced as Fort Collins Utilities has done. Each potential generating project except for the in-line turbine is expected to exceed this amount.

Preliminary Alternate Project Options Proposal to COEM and FEMA

Because we are the first electric utility seeking to build and alternate project which would entail a new power source there is very little published FEMA guidance that speaks to energy related projects. Also there is little precedence on how the program has been implemented. We decided to seek feedback from COEM and FEMA on the most feasible identified projects that were identified in advance of the formal submittal in an effort to determine if there were any major concerns or problems that would make the alternate project ineligible for use of the subgrant funds.

On December 5, 2014 the City submitted the four options that had been identified as possible uses for the subgrant funds. Those options were:

- Construction of a new Substation on the Boedecker property in conjunction with a smaller solar facility on the same property.

- Construction of a larger solar facility on the Boedecker property
- Construction of a large solar facility on land that would be obtained through a lease or through a utility easement, such as the Value Plastics site.
- Construction of a hydroelectric power plant at the Water Treatment Plant.

In addition to a brief description of the projects that we were considering, we also included a list of questions related to the feasibility of each site with regard to the regulations from FEMA on the use of the funds. These questions were designed to determine any complications or regulations that may affect the completion of the project in order to inform the final decision.

COEM and FEMA provided responses to the questions. The general response was that the projects that were identified would meet the requirements from COEM and FEMA. They did not make any assessments based on whether the projects were feasible from a timeline perspective or whether there would be problems discovered during the NEPA review. On December 9th, staff had a follow-up up conference call with COEM to discuss their response. In the call it was reiterated that the top three priorities of COEM and FEMA would be:

- The project would provide benefit to the entire community.
- The City follows all federal procurement and contracting regulations.
- The project goes through the NEPA process to ensure that all permitting is obtained and all impacts of the project are fully reviewed and analyzed.

Staff Recommendations

Staff is developing information about the alternatives on a daily basis. Staff is still processing this information and will be more prepared to discuss specific recommendations at the December 17, 2014 LUC Meeting.

City of Loveland Water and Power
FEMA Alternate Project Report

Prepared for City of Loveland

December 12, 2014

By

NEI Electric Power Engineering
P.O. Box 1265
Arvada, CO 80001
303-431-7895
www.neiengineering.com

(Revision #3)

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Two general types of projects were considered in this study: upgrades to existing systems and installation of energy producing resources. These projects are discussed in this report. The following projects were selected for consideration by FEMA.

1. PROJECT OPTION 1
   A. Construction of the Boedecker Substation—Constructing a new substation at the Boedecker Property.
   B. Boedecker Solar Project—Constructing an approximately 1.8 MW fixed or 1.6 MW 1-axis solar photovoltaic power plant at the Boedecker Property

2. PROJECT OPTION 2
   A. Larger Boedecker Solar Project—Constructing an approximately 3.3 MW fixed or 2.9 MW 1-axis solar photovoltaic power plant at the Boedecker Property

3. PROJECT OPTION 3
   A. Value Plastics Solar Project—Constructing an approximately 3.5 MW fixed or 3.1 MW 1-axis solar photovoltaic power plant at the Value Plastics site.

4. PROJECT OPTION 4
   A. Hydroelectric Power Plant—Install an approximately 275 kW hydroelectric power plant at the Loveland Water Treatment Plant.

Table 1 shows the estimated costs of each option.

Table 1: Summary of costs for suggested projects.

PROJECT OPTION	***TASK***	***ESTIMATED COST***
1	Boedecker Substation	$4,200,000.00
	Boedecker Solar Project (1.8MW fixed, 1.6MW 1-axis)	$4,900,000.00
	TOTAL	$9,100,000.00
2	Larger Boedecker Solar Project	
	3.3MW Fixed	$8,523,684.21
	2.9MW 1-axis	$8,633,333.33
3	Value Plastics Solar Project (3.5MW fixed, 3.1MW 1-axis)	$9,100,000.00
4	Hydroelectric Power Plant 275kW	$1,805,000.00

The costs shown in Table 1 and those used in the rest of this report should be used for comparison purposes only. They are based on a combination of actual quotes and estimated average values. The sources used in this report for the cost and other assumptions are given in the section on "Methods and Assumptions." The final prices for any of the projects finally chosen may be higher or lower depending upon the specific characteristics of a particular site and the technologies used for the projects. Once a project has been chosen exact quotes should be sought.

INTRODUCTION

NEI was engaged by the City of Loveland to study several projects that may be funded by FEMA. The amount of funding available is approximately $9.1 million and this report examines the positive benefits and where possible, payback times of the different alternatives, and provides other information by which the projects may be compared. There are limitations on the types of projects that FEMA will fund. A partial list of FEMA's requirements includes:

- The project must be in the declared disaster area
- The facility must be owned by the City of Loveland and the City must maintain full responsibility for the facility
- The procurement and construction of the facility must follow federal regulations including Federal Acquisition Regulations (FAR) and the Stafford Act
- The project must comply with Environmental and Historical requirements including full National Environmental Policy Act (NEPA) and State Historical Preservation Office (SHPO) reviews.
- The project must benefit the entire community
- The project must be completed in the established time frames.
- Funding cannot be used to provide ongoing O&M costs

The projects consist of two general types. The first type is projects that generate electrical energy and the second type is projects that are improvements or additions to existing Loveland facilities. Included in the first general type of project are:

1. Building a solar photovoltaic power plant which may be located at any one of four different locations. The locations considered are:
   a. Value Plastic site
   b. I-25 and Highway 402 site
   c. Fort Collins—Loveland Airport site
   d. Boedecker property site

2. Building a hydroelectric power plant at the Loveland Water Treatment Plant

Included in the second type of project are the following:

1. Improving the City's fiber optic network

2. Building the Boedecker Substation or improving the West Substation site to resist future flood impacts

ENERGY PRODUCING PROJECTS

Methods and Assumptions

There are four locations being considered for the installation of a solar photovoltaic (PV) power plant and one site for a hydroelectric plant. Operation of the plants after construction is automatic in most cases but some operation and maintenance (O&M) will be needed. In the case of the PV systems most (O&M) costs are due to vegetation management and replacement and maintenance of inverters. Vegetation management is needed to reduce the risk of fire and prevent shading of the array by plant life. Due to the consequences of vegetation the land upon which a photovoltaic power plant is built is typically dedicated exclusively to its use. A hydroelectric plant has a number of moving parts subject to wear. This makes periodic monitoring and maintenance necessary resulting in makes the O&M costs being slightly higher than for a PV system.

Most of the costs used in this report are average values for power plants of these types presently being installed in the United States and are typical costs. In some cases, where time allowed, NEI got actual quotes from contractors for the type of construction work anticipated, but in most cases construction costs were estimated. The exact costs that will finally be seen may be higher or lower than those contained herein depending upon the exact characteristics of the site chosen and the technologies used in the power plants. The cost and land used for the PV systems will be especially sensitive to the exact technology used in the array. Even so, the costs shown should be reasonably close to actual final costs and it is hoped that the typical values used in this report will be useful for the purpose of comparison between different sites and installations.

There are two common types of PV systems that are candidates for the types of installations being contemplated by Loveland: fixed systems and 1-axis tracking systems. A fixed system does not track the sun and is the

simplest to install. Its O&M costs over the life of the plant are also only approximately 70% of the costs of the 1-axis tracking system. A 1-axis tracking system keeps the PV array pointed toward the sun from sunrise to sunset, but does not track the sun as it changes altitude during the year. A 1-axis tracking system takes more land area than a fixed system for the installed MW capacity, but will generally generate more energy on an annual basis than the fixed system for each MW of capacity installed.

Tracking systems typically need more maintenance due to the greater number of moving parts and a more complex control system. The bulk of maintenance for both types of PV systems will be due to cleaning, vegetation management and inverter maintenance. The cost of operations and maintenance (O&M) for a fixed system is approximately $32.00/kW/year and the cost for a tracking system is approximately $45.00/kW/year.[1] The cost of O&M for a small hydroelectric plant is approximately $52/kW/year[2]. For the comparisons in this report these values were assumed to increase at a rate of 2%/year and a discount rate of 1.7% was used for finding the present value of annual maintenance costs over the 25 year life of the PV system and the 20 year assumed life of the hydroelectric plant. In this study it was assumed that the land costs and the O&M costs would not be paid for from the $9.1 million dollar subgrant and the $9.1 million would pay for only the PV installation costs and the interconnection costs.

Even though 25 years is the time period often assumed for the life of a PV system the output of the panels will not have decreased to zero at that time. Depending upon the type of technology used the panels can be expected to degrade 0.8%/year, so in 25 years their output will be reduced to of 80% of their output when new.[3] This degradation will vary with the module technology used, and the actual durability of these panels after their stated life is unknown since modern PV panels have been in use for such a short time. For this report the 0.8% degradation per year was used but it should be understood that this value is very sensitive to panel technology. The PV system can be left in service for as many years beyond its design life at this gradually reducing output as long as maintenance costs are acceptable. For this study the typical life of 25 years was used for the plant but is should be understood that a PV power plant will still have some output and can be kept in service if desired beyond its stated life.

Likewise, the assumed lifetime of the hydroelectric plant used in this report is 20 years. However, there are many small hydroelectric plants in the United States that have been in use for over 50 years. It would be expected that with normal maintenance and some refurbishment the plant could operate at its full output for many years beyond the 20 years used in this study.

A fixed PV system needs approximately 7.6 acres/MW[4] of installed capacity on average and will generate approximately 230 MWh/acre/yr. of energy at a site along the Front Range of Colorado. A 1-axis tracking system requires approximately 8.7 acres/MW[4] on average and will generate approximately 262 MWh/acre/yr. The present cost of ground mounted photovoltaic systems of the 1-5MW size in the United States is approximately $2.50/Watt for a fixed system and $2.90/Watt for a 1-axis tracking system, not including the interconnection or land costs. These average values were used for the analysis in this report.

A present worth comparison on an annualized basis was done between the projects. The present value of the O&M costs, land, PV system, and interconnection costs were summed to produce the total present worth of each project. Next, the present worth of the energy produced and Loveland's demand costs were calculated during the lifetime of each plant. The sum of the present worth of energy and demand costs is the avoided costs due to installing each plant. This is the present worth of the amount that will not need to be paid to PRPA during the plant's lifetime.

[1] *Addressing Solar Photovoltaic Operations and Maintenance Challenges A Survey of Current Knowledge and Practices*, Electric Power Research Institute, July 2010,
[2] *Renewable Energy Technologies: Cost Analysis Series, Volume 1: Power Sector Hydropower*, International Renewable Energy Agency, June 2012.
[3] Dirk C. Jordan and Sarah R. Kurtz, *Photovoltaic Degradation Rates — An Analytical Review*, National Renewable Energy Laboratory, Journal Article NREL/JA-5200-51664, June 2012.
[4] Sean Ong, Clinton Campbell, Paul Denholm, Robert Margolis, and Garvin Heath, *Land-Use Requirements for Solar Power Plants in the United States*, National Renewable Energy Laboratory, Technical Report NREL/TP-6A20-56290, June 2013.

The present worth is defined as the value at the present time of a cost incurred (or value of energy generated) at a particular year in the future assuming those costs were compiled at the end of the year. The equation used in this report to compute the present worth of a future value is[5]:

$$P = F(1+i)^{-n}$$

Where:
P=Present value
F=Future value at the end of year n
i=interest rate, 1.7% or 0.017 in this study

The charges resulting from Loveland's purchase of electricity from PRPA are divided into two different types. The first is an energy charge that pays for each kilowatt-hour kWh of electricity purchased. The second charge is a demand charge which requires Loveland to pay a cost for each kW of demand that occurs at the time PRPA has the largest demand on their system. Both charges change seasonally. The summer season is defined as June, July, and August, and the winter season includes September-May. The cost of electricity purchased from PRPA starting January 2015 is shown in Table 2 and these values were used in this study.

Table 2: Loveland's electrical costs beginning 2015.

Season	*Energy Charge*	*Demand Charge*
Summer	$0.03943/kWh	$10.84/kW
Winter	$0.03783/kWh	$7.57/kW

It was assumed for this study that both the energy and demand charges will increase 3.5%/year. A number of assumptions about the exact construction of the PV systems are needed to allow the calculation of the amount that each PV system will offset the demand charges. It was assumed that the fixed system was aimed directly south and installed at an angle equal to the latitude of Loveland. This would normally maximize the amount of energy generated in a year. For the 1-axis system it was assumed the system was oriented north-south and mounted horizontally.

Loveland provided the demand data for their system including the day and time at which peak demand occurred each month for the past four years. The information provided is shown in Table 3.

Table 3: Peak demand and times of occurrence—2011 through 2014.

	2011			*2012*			*2013*			*2014*		
Month	*Day*	*Hour*	*MW*	*Day*	*Hour*	*MW*	*Day*	*Hour*	*MWh*	*Day*	*Hour*	*MWh*
Jan.	31	18:00	97.112	11	18:00	97.112	14	19:00	98.412	6	18:00	100.285
Feb.	1	18:00	92.026	7	19:00	92.026	26	19:00	92.875	5	19:00	102.753
March	7	18:00	88.578	1	19:00	88.578	4	19:00	91.251	1	19:00	90.246
April	13	19:00	77.453	24	13:00	83.546	9	12:00	88.29	13	21:00	80.546
May	9	14:00	83.498	22	17:00	97.234	17	17:00	100.587	28	18:00	109.41
June	28	17:00	126.402	25	17:00	148.76	27	16:00	144.464	30	17:00	123.388
July	18	17:00	139.866	20	16:00	147.585	11	17:00	146.696	22	18:00	144.141
Aug.	23	16:00	136.134	8	18:00	136.130	27	17:00	140.376	13	16:00	133.827
Sept.	1	18:00	129.298	4	18:00	123.680	6	15:00	139.032	3	18:00	123.900
Oct.	3	18:00	97.592	2	17:00	87.795	28	19:00	87.202	7	17:00	86.803
Nov.	16	18:00	90.4	26	18:00	94.437	21	18:00	96.87			
Dec.	5	18:00	105.024	19	18:00	101.596	9	18:00	105.291			

The information in Table 3 was used to determine the percentage of its full output power each PV array would be expected to generate at the exact time and day when peak demand occurred during the years shown. To find the amount of generated power at these times the amount of effective solar insolation on the array at the time and date of the peak demand was calculated. Direct, diffuse, and reflected insolation using a ground reflectance coefficient ρ=0.2, were calculated for each month and summed to get the total effective insolation on the array. It was assumed that the sky was completely clear at the date and time of peak demand in all cases. The values of effective solar insolation on the day and time of peak demand for each of the past four years were averaged

[5] Donald G. Newnan and Bruce Johnson, *Engineering Economic Analysis, Fifth Edition*, Engineering Press Inc., San Jose, CA, ISBN 0-910554-83-5, 1995

to determine the average amount of effective incident insolation on the array during the times of peak demand.[6] The amount of incident solar insolation at the time of the peak demand as a percentage of the maximum annual incident solar insolation falling on the array was calculated. The average value of the power generated at the time of peak demand was assumed to be this percentage of the array rated output. The percentage of the rated output that each array would be expected to generate at the date and time of the peak demand each month is shown in Table 4. This calculated array output was multiplied by the demand charges in Table 2 to determine the average amount of the demand cost that would be offset by the PV system. For the hydroelectric plant it was assumed that it could be controlled to produce peak output at the time of peak demand each month. The present values of the demand charges each year were determined and included in the present value of electricity generated as an avoided cost that will not have to be paid to PRPA.

Table 4: Percentage of array output available at the time of peak demand.

Month	*Fixed Array*	*1-Axis Array*	*Hydroelectric Plant*
January	0.00%	0.00%	100%
February	0.00%	0.00%	100%
March	0.00%	0.00%	100%
April	48.81%	57.20%	100%
May	55.23%	91.36%	100%
June	48.21%	91.22%	100%
July	40.91%	85.86%	100%
August	44.40%	81.58%	100%
September	30.99%	63.50%	100%
October	19.46%	38.58%	100%
November	0.00%	0.00%	100%
December	0.00%	0.00%	100%

To calculate the value of energy costs for the electricity generated by the PV power plants each month, the percentage of the yearly output of a PV plant that is expected to be generated every month was determined from data supplied by the National Renewable Energy Laboratory (NREL)[7] and is shown in Table 6. The hydroelectric plant was assumed to generate equal amounts of energy each month.

Table 5: Percentage of annual energy generated each month.

Month	*Fixed Array*	*1-Axis Array*	*Hydroelectric Plant*
January	6.70%	4.81%	8.33%
February	7.76%	6.36%	8.33%
March	8.52%	8.05%	8.33%
April	9.13%	9.87%	8.33%
May	8.98%	10.65%	8.33%
June	9.28%	11.82%	8.33%
July	9.28%	11.69%	8.33%
August	9.28%	10.65%	8.33%
September	9.13%	9.22%	8.33%
October	8.52%	7.40%	8.33%
November	7.00%	5.19%	8.33%
December	6.39%	4.29%	8.33%

The cost of the electricity generated by each plant was calculated by dividing total present worth of the project by the amount of energy the plant was expected to produce during its lifetime to get the energy costs in $/kWh. The number of years for a plant to break even was arrived at by finding the year in which the total present worth of all the electricity made by the plant up until that year equaled the project present worth for the same year.

[6] Gilbert M. Masters, *Renewable and Efficient Electrical Power Systems*, John Wiley & Sons, Inc. Hoboken, NJ, ISBN -0471-28060-7, 2004, pp. 385-439.

[7] William Marion and Stephen Wilcox, *Solar Radiation Data Manual for Flat-Plate and Concentrating Collectors*, NREL, Golden, CO, April, 1994.

A second payback period was also calculated using only the cost Loveland will incur for each plant. Since FEMA will provide funds for the interconnection and plant construction costs, the only costs incurred by Loveland will be land and O&M costs. To get the payback period considering only Loveland's costs, the present worth of these costs were calculated and the year when the present worth of these costs equal the present worth of the generated electricity is given as this payback period.

1a. Value Plastics Solar Project

The Value Plastics site is shown in Figure 1 and consists of approximately 50 acres. This property is annexed to the City of Loveland. This site is adjacent to the Horseshoe Substation but is separated from it by a railroad right of way. This means that to interconnect directly with the substation the distribution line installed to interconnect the PV system will include a railroad crossing. However, there is an existing underground distribution line at the south side of the substation that may be intercepted to connect the new PV system to the 12.47kV distribution system. The location of this line is shown in Figure 2.

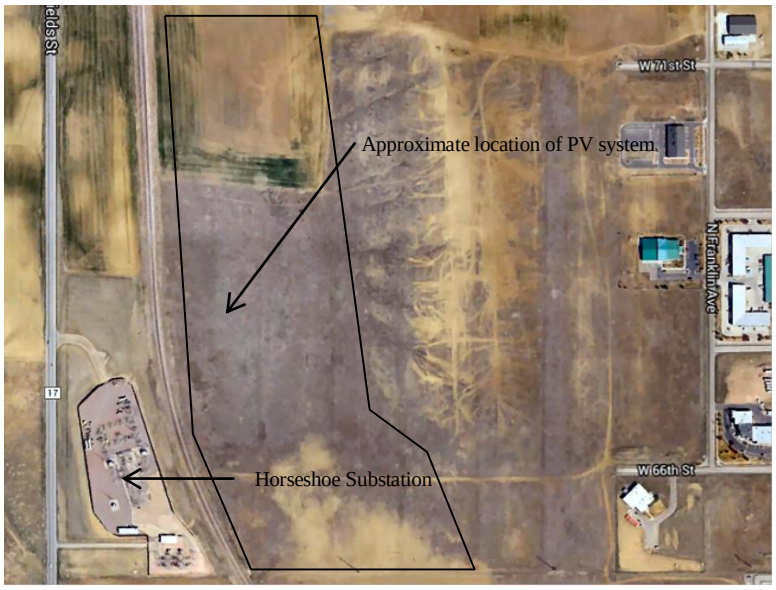


Figure 1: Value Plastic's site showing the Horseshoe Substation.

The cost of the interconnection will depend on the final interconnection configuration. The costs shown in Table 6 are based upon the assumption that the existing underground feeder is adequate and may be used for the interconnection.

The site is large enough to install up to a 6.5 MW fixed system or a 5.7 MW 1-axis tracking PV system if the funds were available. However, the amount that can be installed using only $9.1 million is shown in Table 6. It is assumed for this analysis and those to follow that only the array cost and the interconnection costs would be paid out of the $9.1 million provided by FEMA. The O&M costs and utility easement costs would be paid from other funds.

Figure 2: Horseshoe Substation and distribution line.

Table 6: Cost analysis for the Value Plastics Solar Project.

	Fixed System	*1-Axis Tracking System*
Array Size (kW)	3,550.00	3,060.34
Land Needed (acres)	26.98	26.63
Land Cost—Utility Easement (per acre)	$14,500.00	$14,400.00
Land Present Value (Utility Easement)	$391,210.00	$383,400.00
Interconnection Cost	$225,000.00	$225,000.00
PV Array Cost	$8,875,000.00	$8,875,000.00
O&M Present Value	$2,893,649.84	$3,507,926.80
Total Present Value	$12,384,859.84	$12,991,326.80
Present Value of Loveland's Costs	$3,284,859.84	$3,891,326.80
Energy Generated Annually 1st Year (MWh)	6,205.40	6,975.75
Total Energy Generated in Life of Plant (25 yrs.) MWh	141,116.60	158,635.08
Present Value of Energy Avoided Costs in life of plant	$6,560,026.19	$7,393,826.89
Present Value of Demand Charges avoided in life of plant	$2,508,428.70	$3,973,714.65
Present Value of Total Electrical Charges avoided in life of plant	$9,068,454.89	$11,367,541.54
Average Cost of Electricity Over Life of Plant $/kWh	$0.088	$0.082
Payback Period (Total Cost) Years	36	30
Payback Period (Loveland's Cost) Years	2	2
Percentage of Present Cost of Plant Paid for by Avoided Energy Purchases	73.22%	87.50%
Percentage of Loveland's Present Costs Paid for by Avoided Energy Purchases	276.07%	292.13%

*These values are unknown at this time but have been calculated to determine the cost of land to make this option the least expensive on a $/kWh basis.

Two columns are given in this table, one for a fixed PV system and the other for a 1-axis tracking system. For this and all similar tables to follow the meaning of the headings are described below.

- *Array Size*—This is the rated plant output in kilowatts that can be built for the funds or land available.
- *Land Needed*—This is the estimated amount of land area in acres needed to contain a PV system of the given size
- *Land Cost*—This is the cost of land provided which was provided to NEI by Loveland. For the Value Plastics site, this is an estimated cost necessary to make this the project the lowest costs among the PV plants.

- *Land Present Value*—This is the calculated present value for the land that the PV site will need
- *Interconnection Cost*—This is the estimated cost of interconnecting the plant to the nearest distribution line
- *PV Array Cost*—This is the estimated cost of the PV array, inverters, and PV system wiring, etc.
- *O&M Present Value*—This is the present value of the operations and maintenance costs of the plant over its lifetime assuming 25 years for the PV plants and 20 years for the hydroelectric plant assuming a 1.7% discount rate.
- *Total Present Value*—This is the sum of the Land Present Value, Interconnection Cost, PV Array Cost, and O&M Present Value
- *Present Value of Loveland's Costs*—This is the present value of only the costs directly incurred by Loveland, i.e. the sum of Land Present Value and O&M Present Value
- *Energy Generated Annually 1st Year*—This is the amount of energy that the plant could be expected to generate in a year without any degradation due to age
- *Total Energy Generated in Life of Plant*—This is the total energy in megawatt-hours that can be expected to be generated by this plant in its lifetime including degradation of the plant output with time
- *Present Value of Energy Avoided Costs in Life of Plant*—This is the present value of the energy the plant would be expected to generate in its lifetime. This is the amount of energy that will not need to be purchased from PRPA due to the power plant output
- *Present Value of Demand Charges Avoided in Life of Plant*—This is the present value of the demand charges avoided due to the plants generating power at the time of peak demand.
- *Present Value of Total Electrical Charges Avoided in Life of Plant*—This is the sum of present value of avoided energy charges and demand charges. This is the total amount of avoided costs of electricity, both energy and demand, due to the output of the power plant.
- *Average Cost of Electricity Over Life of Plant $/kWh*—This found by dividing the total present value of the plant by the total energy generated by the plant during its lifetime
- *Payback Period (Total Cost) Years*—This is the number of years it takes for the present value of the electricity generated to equal the total present value of the plant
- *Payback Period (Loveland's Cost) Years*—This is the number of years it takes for the present value of electricity generated to equal the present value of Loveland's cost for the plant. It does not include the $9.1 million supplied by FEMA
- *Percentage of Present Cost of Plant Paid for by Avoided Energy Purchases*—This is the percentage of the plants total cost that is paid for by the value of electricity the plant will generate during its lifetime. For example, if this value was 50%, it would mean the plant generates 50% of the electricity necessary to pay for itself in its lifetime.
- *Percentage of Loveland's Present Costs Paid for by Avoided Energy Purchases*—This is the percentage of Loveland's costs that are paid for by the value of electricity the plant will generate during its lifetime. For example, if this value was 150% it would mean that in the life of the plant the value of electricity generated would be 1.5 times the cost of the plant to Loveland.

Some explanation is needed for the land costs shown in Table 6. Among the other three possible sites for PV systems, the lowest cost of generation occurred at the Boedecker Property as may be seen by comparing the cost of electricity row in Table 8, Table 10, and Table 12. The cost for purchasing the utility easement at the Value Plastics site is unknown at this time. For that reason, a calculation was done to determine the cost for which land would have to be acquired to make the price of energy generation at this site lower than the other sites. Those values are shown in red in Table 6. If the cost of purchasing the utility easement at this site is less than $14,500.00/acre if a fixed system is chosen or $14,400.00/acre if a 1-axis system is chosen, then the Value Plastics site would produce electricity for a lower cost that the Boedecker Property. If the cost of purchasing land exceeds these values then the Boedecker Property should be chosen over the Value Plastics site.

Table 7 displays the anticipated schedule for this project. This table does not include the time required to obtain the utility easement or the NEPA or SHPO requirements.

Table 7: Construction schedule: Value Plastics Solar Project

	2015													2016											2017							
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
1																																	
2																																	
3																																	

1. Engineering
2. Equipment Procurement
3. Construction

1b. I-25 and Hwy 402 Solar Project

There is 37 acres of city owned land available near the intersection of highways I-25 and 402 which is annexed to the City of Loveland. The proposed location of the PV system is shown in Figure 3. An important concern with this site is the lack of electrical infrastructure nearby.

The site is large enough to install a 4.8 MW fixed or 4.25 MW 1-axis PV system. However, the size will be limited by the available funds and the cost of adding the needed infrastructure to interconnect the PV system to the Loveland distribution system.

The nearest distribution line to the site is approximately 3.5 miles away along South Boise Avenue. All new construction to the site must be placed underground and an easement must be obtained for the land used. An overhead distribution line exists at the corner of Boise Avenue and Hwy 402 that appears to be the closest place which could be used to connect to the underground line that would feed the new site. It is assumed that this existing distribution line is capable of handling the PV system output without being upgraded and that right-of-way could be acquired along Hwy 402. If any existing line upgrades are needed, such as installing larger conductors on the overhead line that was used for the interconnection, this cost is not included in the prices shown below. One possible line route is shown in Figure 4.

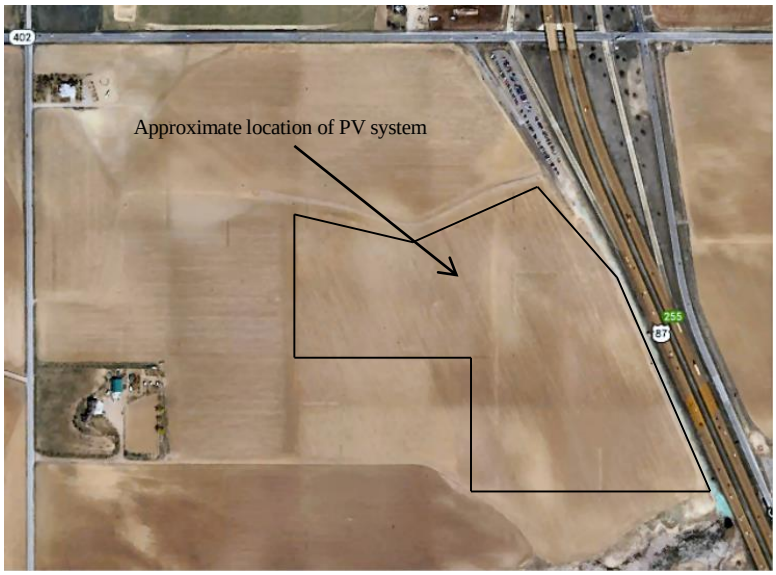


Figure 3: I-25 and Hwy 402 PV Solar Project Site.

Figure 4: Line route from PV site to interconnection point.

Using the approximate cost that was provided by Loveland Water and Power of $507,000.00 per mile for underground distribution line construction, and considering the cost of an underground to overhead connection, the approximate cost and size of the PV system is shown in Table 8 and Table 9 shows the construction schedule.

Table 8: Cost analysis for the I-25 and Hwy 402 Solar Project.

	Fixed System	***1-Axis Tracking System***
Array Size (kW)	2,920.00	2,517.24
Land Needed (acres)	22.19	21.90
Land Cost (per acre)	$70,000.00	$70,000.00
Land Present Value	$1,553,440.00	$1,533,000.00
Interconnection Cost	$1,800,000.00	$1,800,000.00
PV Array Cost	$7,300,000.00	$7,300,000.00
O&M Present Value	$2,380,128.88	$2,885,393.31
Total Present Value	$13,033,568.88	$13,518,393.31
Present Value of Loveland's Costs	$3,933,568.88	$4,418,393.31
Energy Generated Annually 1st Year (MWh)	5,104.16	5,737.80
Total Energy Generated in Life of Plant (25 yrs.) MWh	116,073.37	130,482.94
Present Value of Energy Avoided Costs in life of plant	$5,395,852.53	$6,081,682.96
Present Value of Demand Charges avoided in life of plant	$2,063,270.93	$3,268,520.22
Present Value of Total Electrical Charges avoided in life of plant	$7,459,123.46	$9,350,203.18
Average Cost of Electricity Over Life of Plant $/kWh	$0.112	$0.104
Payback Period (Total Cost) Years	47	38
Payback Period (Loveland's Cost) Years	9	7
Percentage of Present Cost of Plant Paid for by Avoided Energy Purchases	57.23%	69.17%
Percentage of Loveland's Present Costs Paid for by Avoided Energy Purchases	189.63%	211.62%

Table 9: Construction schedule: I-25 and Hwy 402 Solar Project.

	2015													2016											2017								
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
1																																	
2																																	
3																																	

1. Engineering
2. Equipment Procurement
3. Construction

Table 9 does not include the time needed to obtain the easement for the new underground line, and it is possible that adding this additional time will mean the project may not finish construction by the September 2017 deadline. The NEPA process needed for this line construction may also delay the project beyond the deadline.

After the construction of the PV system there will still be approximately 15 acres left at this site for alternative use. One possibility is a mixed use site that would accommodate fracking or other well drilling and servicing equipment. These types of additional uses and their potential value were not considered in this report.

The possibility has been raised that this area could be expanded in the future and turned into an energy park. There is sufficient land to install an additional 1-2 MW of PV at the site, but the remaining land is of questionable use for other electrical energy related purposes. To add additional electrical generating resources a source of fuel must be identified. The value of the remaining land at this site is limited by the availability of other fuel sources and the land area available. Some other generation types that potentially could be installed on the remaining land at this site are considered below. These new plants will likely be owned by independent power producers rather than Loveland, and while not selling power directly to Loveland (since Loveland must purchase its power from PRPA) they could be provided with interconnection facilities to interconnect with Loveland's distribution system.

1. Wind: The area is a Class 1 wind site according to NREL and is classified as "poor". It is unlikely that any wind resources would be cost effective on the site.
2. PV: There is room for an additional 1-2 MW of solar photovoltaic power to be generated at the site and this expansion could be easily done if planned for when the infrastructure for the original interconnection was provided.
3. Solar thermal: These plants require area for both the collector system and the steam turbine. While there might be enough land available for a small system of this type, the cost of this resource would probably not be less than simply installing additional photovoltaic panels and inverters.
4. Natural gas reciprocating, turbine engines or microturbines: There is room to develop a natural gas fueled power plant if desired. The remaining land area could conceivably support a power plant delivering 5-10 MW. This would require the installation of considerable infrastructure including the gas delivery system and a dedicated distribution line to the site. If there are natural gas wells in the area it is possible to process gas directly from the wells for use in the power plant. This can reduce the costs of the gas delivery system and waste gas burning power plants have been successful in oil and natural gas fields at other locations. A power plant in the 5-10MW range would likely require the installation of a dedicated distribution line.
5. Municipal solid waste or agricultural waste: Depending upon the amount of waste available it might be possible to install a small waste processing system that could deliver enough fuel to feed a small generator. This would require a transportation system for the waste to the site. Except in rare cases the transportation costs usually make this option uneconomical and this option would take extensive study before its feasibility could be determined.
6. Fuel cells: The remaining area could be used for the interconnection of fuel cells. The needed infrastructure would be similar to that installed for other natural gas fueled generating equipment. A natural gas delivery system would be needed and if the power plant were large enough a dedicated distribution line may be needed.

Small power plants of the types shown above have all proven successful in some settings. However, unless a ready and easily obtainable and transportable fuel source is identified, the best choice would be to simply install a larger solar plant or dedicate the land to alternative uses such as fracking or other well drilling purposes.

1c. Airport Solar Project

There are several potential sites available near the airport. Some of them are smaller than needed, however. The best site would contain the complete PV system on one contiguous plot of land to make possible interconnecting to the Loveland electrical distribution system at only one point. Of the possible sites, two are of sufficient size and one of them is directly adjacent to a distribution line which would make interconnection relatively easy and lower the interconnection costs. It is also near the Crossroads Substation. This site, shown in Figure 5, is approximately 41 acres.

There is a larger site slightly to the south that consists of 59 Acres. It borders an underground distribution line, and the site would also be suitable for the PV system installation. This site is shown in Figure 6.

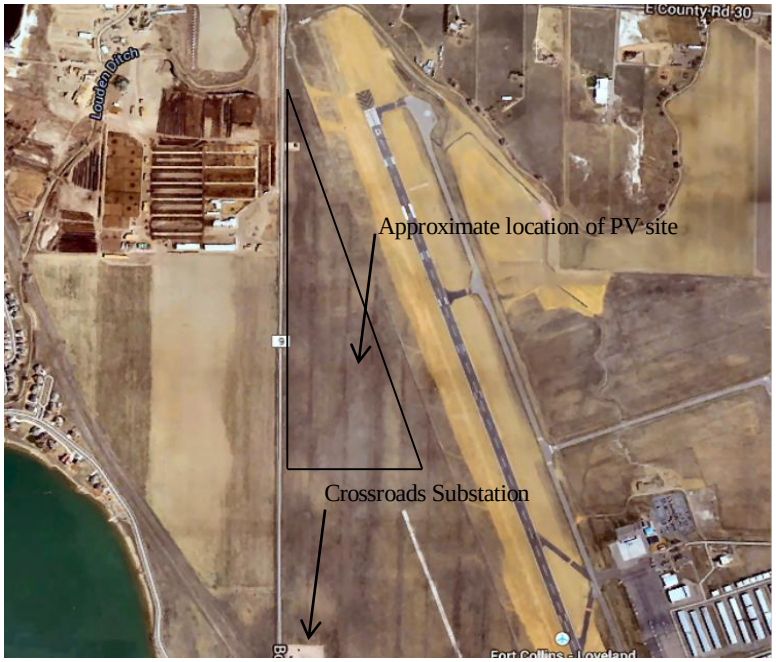


Figure 5: Airport Solar Project site.

Figure 6: Alternate airport PV Solar Project site.

This site in Figure 6 is not quite as desirable as the site shown in Figure 5 because the connection to the distribution line near the site in Figure 5 will be slightly easier to make than the connection that would be necessary to interconnect with the underground line near the alternate site in Figure 6. However, either site could accommodate the planned PV system.

The site in Figure 5 could accommodate 5.4 MW of fixed PV or 4.7MW of 1-axis tracking PV. The site in Figure 6 is large enough for 7.7 MW fixed PV or 7.8 MW of 1- axis tracking PV. The amount that can be installed will be limited by the available funds rather than available land area.

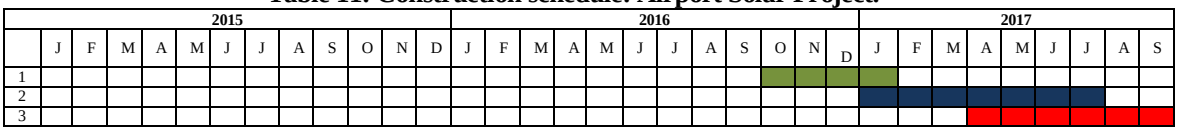
The analysis of the PV system at this site is shown in Table 10.

Table 10: Cost analysis for the Airport Solar Project.

	Fixed System	***1-Axis Tracking System***
Array Size (kW)	3,620.00	3,120.69
Land Needed (acres)	27.51	27.15
Land Cost (per acre per year)	$9,600.00	$9,600.00
Land Present Value	$5,342,751.04	$5,272,451.69
Interconnection Cost	$50,000.00	$50,000.00
PV Array Cost	$9,050,000.00	$9,050,000.00
O&M Present Value	$2,950,707.72	$3,577,097.18
Total Present Value	$17,393,458.76	$17,949,548.87
Present Value of Loveland's Costs	$8,293,458.76	$8,849,548.87
Energy Generated Annually 1st Year (MWh)	6,327.76	7,113.30
Total Energy Generated in Life of Plant (25 yrs.) MWh	143,899.18	161,763.09
Present Value of Energy Avoided Costs in life of plant	$6,689,378.82	$7,539,620.66
Present Value of Demand Charges avoided in life of plant	$2,557,890.67	$4,052,069.59
Present Value of Total Electrical Charges avoided in life of plant	$9,247,269.49	$11,591,690.24
Average Cost of Electricity Over Life of Plant $/kWh	$0.121	$0.111
Payback Period (Total Cost) Years	61	48
Payback Period (Loveland's Cost) Years	14	1
Percentage of Present Cost of Plant Paid for by Avoided Energy Purchases	53.17%	64.58%
Percentage of Loveland's Present Costs Paid for by Avoided Energy Purchases	111.50%	130.99%

Table 11 displays the anticipated schedule for this project.

Table 11: Construction schedule: Airport Solar Project.



1. Engineering
2. Equipment Procurement
3. Construction

1d. Larger Boedecker Solar Project

The property at this site consists of 25 acres that could be used for a PV site and an additional 4-5 acres that would be used for a future substation. Loveland Water and Power owns this land. Figure 7 shows the location of the Boedecker Substation and PV site. The site is not large enough to accommodate the maximum size array that could be purchased for the available funds since only 25 acres are available. This is the only site among those considered where the size of the array that can be installed is limited by the land available rather than the money available. Assuming only 25 acres are available Table 12 shows the analysis of the power plant that could be installed.

There is presently an underground distribution line just south of 14th St SW that could be extended to the PV site, as shown in Figure 7, to interconnect the system assuming the existing underground distribution line is

adequately sized to carry the output of the power plant. This extension and the boring under the road will add to the cost of the interconnection. The analysis of this project is shown in Table 12.

Table 12: Cost analysis for the Larger Boedecker Solar Project.

	Fixed System	*1-Axis Tracking System*
Array Size (kW)	3,289.47	2,873.56
Land Needed (acres)	25.00	25.00
Land Cost (per acre)	$10,833.00	$10,833.00
Land Present Value	$270,825.00	$270,825.00
Interconnection Cost	$300,000.00	$300,000.00
PV Array Cost	$8,223,684.21	$8,333,333.33
O&M Present Value	$2,681,291.55	$3,293,827.98
Total Present Value	$11,475,800.76	$12,197,986.31
Present Value of Loveland's Costs	$2,952,116.55	$3,564,652.98
Energy Generated Annually 1st Year (MWh)	5,750.00	6,550.00
Total Energy Generated in Life of Plant (25 yrs.) MWh	130,760.38	148,953.13
Present Value of Energy Avoided Costs in life of plant	$6,078,600.99	$6,942,560.46
Present Value of Demand Charges avoided in life of plant	$2,324,340.90	$3,731,187.47
Present Value of Total Electrical Charges avoided in life of plant	$8,402,941.89	$10,673,747.92
Average Cost of Electricity Over Life of Plant $/kWh	$0.088	$0.082
Payback Period (Total Cost) Years	36	30
Payback Period (Loveland's Cost) Years	2	2
Percentage of Present Cost of Plant Paid for by Avoided Energy Purchases	73.22%	87.50%
Percentage of Loveland's Present Costs Paid for by Avoided Energy Purchases	284.64%	299.43%

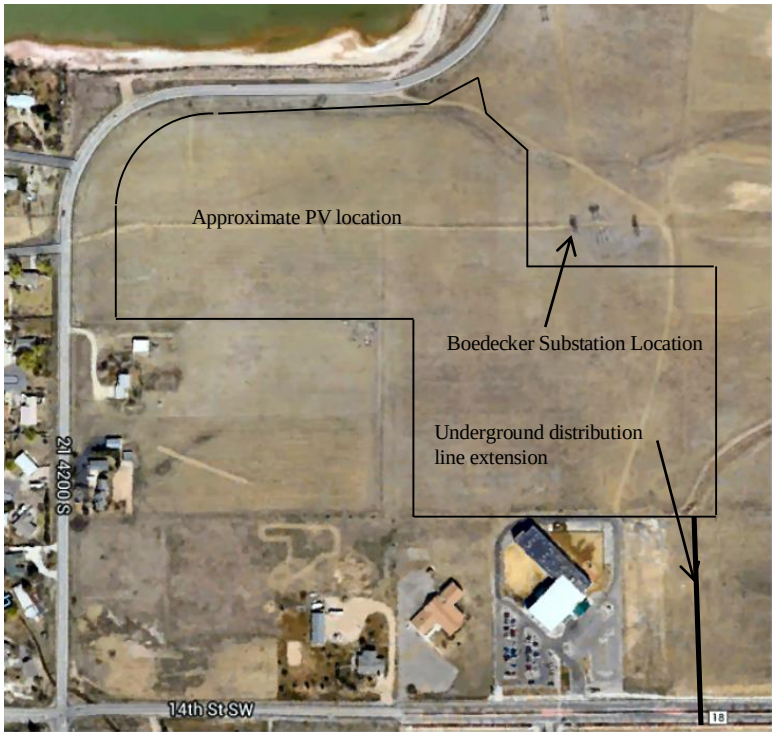
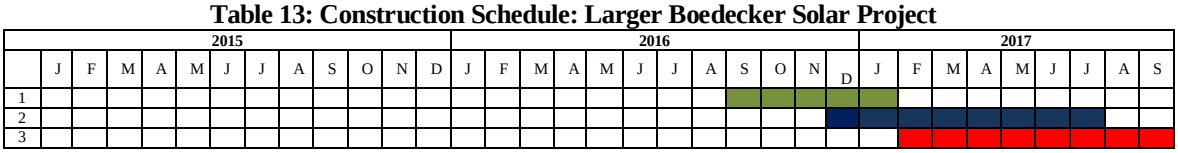


Figure 7: Boedecker Solar Project site.

Table 13 contains the anticipated schedule for this project.

Table 13: Construction Schedule: Larger Boedecker Solar Project



1. Engineering
2. Equipment Procurement
3. Construction

1e. Boedecker Solar Project

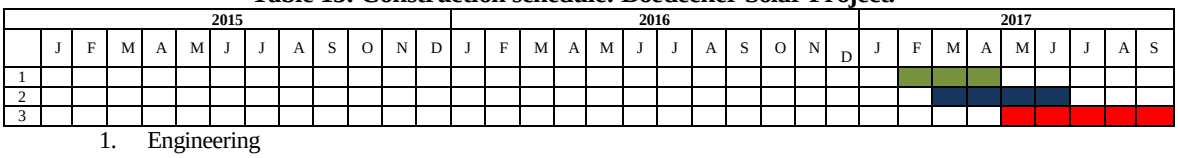
If the Boedecker Substation were built on this property there will be approximately $4,900,000.00 left to install a PV system on the area adjacent to the substation. The PV system may be directly connected to the substation and the extension of the underground distribution line shown in Figure 7 will not be needed. The interconnection costs will be included in the price of the substation. Table 14 shows the analysis of the power plants if the two projects are done together.

Table 14: Cost analysis for the Boedecker Solar Project if the project is done in conjunction with the Boedecker Substation.

	Fixed System	***1-Axis Tracking System***
Array Size (kW)	1,840.00	1,586.21
Land Needed (acres)	13.98	13.80
Land Cost (per acre)	$10,833.00	$10,833.00
Land Present Value	$151,488.67	$149,495.40
Interconnection Cost	$0.00	$0.00
PV Array Cost	$4,600,000.00	$4,600,000.00
O&M Present Value	$1,499,807.24	$1,818,193.04
Total Present Value	$6,251,295.91	$6,567,688.44
Present Value of Loveland's Costs	$1,651,295.91	$1,967,688.44
Energy Generated Annually 1st Year (MWh)	3,216.32	3,615.60
Total Energy Generated in Life of Plant (25 yrs.) MWh	73,142.12	82,222.13
Present Value of Energy Avoided Costs in life of plant	$3,400,126.25	$3,832,293.37
Present Value of Demand Charges avoided in life of plant	$1,300,143.33	$2,059,615.48
Present Value of Total Electrical Charges avoided in life of plant	$4,700,269.58	$5,891,908.85
Average Cost of Electricity Over Life of Plant $/kWh	$0.085	$0.080
Payback Period (Total Cost) Years	35	29
Payback Period (Loveland's Cost) Years	2	2
Percentage of Present Cost of Plant Paid for by Avoided Energy Purchases	75.19%	89.71%
Percentage of Loveland's Present Costs Paid for by Avoided Energy Purchases	284.64%	299.43%

Table 15 contains the anticipated schedule for the Boedecker Solar Project. This shows the timeline for the solar project only, not the substation construction.

Table 15: Construction schedule: Boedecker Solar Project.



1. Engineering
2. Equipment Procurement
3. Construction

Solar Project Comparison

All the proposed sites are suitable for a PV power plant in the sizes anticipated. Table 16 summarizes the information discussed thus far and shows the comparison of the sites based upon cost of the generated electrical energy and payback period. Table 17 compares the projects based upon the amount of their costs they will return

to Loveland over their lifetimes by offsetting energy and demand costs. The information contained in these tables may be used to compare the costs of the projects using various criteria.

Table 16: PV project comparison.

Site		*Array Size (kW)*	*Land Cost*	*Land Area Needed (acres)*	*Electrical Energy Generated (MWh)*	*Equivalent Cost of Generation Cents/kWh*	*Payback Period Total Cost (years)*	*Payback Period Loveland Cost (years)*
Value Plastics Solar Project	Fixed	3,550.00	$14,500.00/acre	26.98	141,116.60	8.8	36	2
	1-Axis	3,060.34	$14,400.00/acre	26.63	158,635.08	8.2	30	2
I-25 and Hwy 402 Solar Project	Fixed	2,920.00	$70,000.00/acre	22.19	116,073.37	11.2	47	9
	1-Axis	2,517.24	$70,000.00/acre	21.90	130,482.94	10.4	38	7
Airport Solar Project	Fixed	3,620.00	$9,600.00/acre/year	27.51	143,899.18	12.1	61	14
	1-Axis	3,120.69	$9,600.00/acre/year	27.15	161,763.09	11.1	48	1
Larger Boedecker Solar Project	Fixed	3,289.47	$10,833.00/acre	25.00	130,760.38	8.8	36	2
	1-Axis	2,873.56	$10,833.00/acre	25.00	148,953.13	8.2	30	2
Boedecker Solar Project	Fixed	1,840.00	$10,833.00/acre	13.98	73,142.12	8.5	35	2
	1-Axis	1,586.21	$10,833.00/acre	13.80	82,222.13	8.0	29	2

*These values are unknown at this time but have been calculated to determine the cost of land to make this option the least expensive on a $/kWh basis.

Table 17: Comparison of PV projects based upon costs paid for by avoided costs.

Project		Project Present Worth	Project Present Worth to Loveland (excludes FEMA funds)	Generated Electricity Present Worth	Percentage of Total Project Cost Repaid by Avoided Electrical Costs	Percentage of Loveland's Costs Repaid by Avoided Electrical Costs
Value Plastics Solar	Fixed	$12,384,859.84	$3,284,859.84	$9,068,454.89	73.22%	276.07%
	1-axis	$12,991,326.80	$3,891,326.80	$11,367,541.54	87.50%	292.13%
I-25 and Hwy 402 Solar	Fixed	$13,033,568.88	$3,933,568.88	$7,459,123.46	57.23%	189.63%
	1-axis	$13.518,393.31	$4,418,393.31	$9,350,203.18	69.17%	211.62%
Airport Solar	Fixed	$17,393,458.76	$8,293,458.76	$9,247,269.49	53.17%	111.50%
	1-axis	$17,949,548.87	$8,849,548,87	$11,591,690.24	64.58%	130.99%
Larger Boedecker Solar Project	Fixed	$11,475,800.76	$2,952,116.55	$8,402,941,89	73.22%	284.64%
	1-axis	$12,197,986.31	$3,564,652.98	$10,673,747.92	87.50%	299.43%
Boedecker Solar Project	Fixed	$6,251,295.91	$1,651,295.91	$4,700,269.58	75.19%	284.64%
	1-axis	$6,567,688.44	$1,967,688.44	$5,891,908.85	89.71%	299.43%

It may be concluded from the information in Table 16 and Table 17 that if a solar project is being considered, the most attractive projects are either the Boedecker Solar Projects or the Value Plastics Solar Project if the utility easement costs for the Value Plastics site are below those shown in red in Table 16. The reason these two sites are less costly and will produce more energy for the amount of money invested is mainly due to the land costs at each site and the relatively low interconnection costs. These projects come the nearest to generating enough electricity to pay for their construction costs, and they return nearly three times Loveland's investment over the expected plant lifetime.

2. Hydroelectric Power Plant

A small hydroelectric power plant could be built at the Loveland Water Treatment Plant (WTP). The proposed location of the plant is shown in Figure 8. The advantages of the site are that the land is owned by the city and there would be no cost for land. There is also a 12.47kV overhead distribution line near the power house site and the interconnection would be relatively simple.

It is proposed that a 275 kW generator could be installed at the site and the energy produced is anticipated to be 812 MWh/year for the first year and gradually increasing to 1,033 MWh/year in 15 years and 1,148 MWh/year in 30 years[8]. The lifetime of the power plant is reported to be 20 years; however, there are many small hydroelectric plants in the western United States that are still in operation after 50 years or more. If this facility is installed it is likely that with normal maintenance the plant will last far longer than the anticipated 20 years.

At this gradually increasing energy output the plant should generate 18,910.5 MWh in 20 years. The projected cost of construction is $1,715,000.00[8] which is on the higher side of typical construction costs for small hydroelectric plants. The O&M costs for small hydroelectric plants are approximately $52/kw/year.[9] The interconnection with the existing distribution line will require the construction of approximately 1,000 feet of new overhead distribution line along with equipment for interconnection to the power plant. Using a cost of $26.34/ft. for overhead construction provided by Loveland Water and Power, the project costs were compared in a similar way as was done with the PV alternatives. The analysis of this plant is shown in Table 18.

Figure 8: Proposed hydroelectric power plant location.

Table 18: Cost analysis for the hydroelectric power plant.

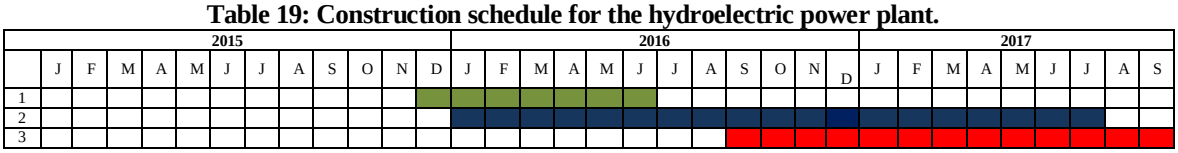
Size (kW)	275.00
Land Needed (acres)	0.00
Land Cost (Per Acre)	$0.00
Land Present Value	$0.00
Interconnection cost	$90,000.00
Plant Cost	$1,715,000.00
O&M Present Value	$289,241.30
Total Present Value	$2,094,241.30
Present Value of Loveland's Costs	$289,241.30
Energy Generated Annually (1st year MWh)	812.00
Total Energy Generated in life of plant (25 yrs.) MWh	18,910.50
Present Value of Energy Avoided Costs in life of plant	$859,974.35
Present Value of Demand Charges avoided in life of plant	$118,222.43
Present Value of Total Electrical Charges avoided in Life of Plant	$978,196.78
Average Cost of Electricity Over Life of Plant $/kWh	$0.111
Payback Period (Total Cost) Years	38
Payback Period (Loveland's Cost) Years	1
Percentage of Present Cost of Plant Paid for by Avoided Energy Purchases	46.71%
Percentage of Loveland's Present Costs Paid for by Avoided Energy Purchases	338.19%

The estimated construction schedule is shown in Table 19.

[8] *WTP Hydroelectric Feasibility Study*, Sunrise Engineering, 2013

[9] *Renewable Energy Technologies: Cost Analysis Series, Volume 1: Power Sector Hydropower*, International Renewable Energy Agency, June 2012.

Table 19: Construction schedule for the hydroelectric power plant.



1. Engineering
2. Equipment Procurement
3. Construction

IMPROVING LOVELAND'S FACILITIES

3. Fiber Optic System

The most important question to be answered when contemplating the installation of a fiber optic system is what the final use of that system will be. There are four broad categories of projects that might be considered.

1. Projects to support future electric utility needs
2. Projects to support present needs of various city departments
3. Projects for ownership and use by Loveland as a city-owned retail broadband internet provider
4. Projects for future use by a commercial communications or internet provider

Each of these final usage types will be briefly discussed. Before investing in such a network, it would be desirable for the final intent of the network to be clearly understood before design and construction is begun.

Fiber installed for future electric utility needs

A fiber optic network system can be of considerable value to an electric power utility. If installed from a central control room to the main substations it can provide a secure communications channel that will make possible advanced monitoring of the electric power system. Among the uses an electric utility may have for a fiber optic network are: the use of Systems Control and Data Acquisition Systems (SCADA), video monitoring of the security of the substation, automated meter infrastructure (AMI) and automated outage management systems (OMS), and extension to video and security monitoring of other city assets. These types of monitoring projects appear to be a growing trend in the electric power industry to improve the security of the utility's infrastructure and reduce outages that might occur due to equipment failure, vandalism or sabotage.

At this time, Loveland's substations have a fiber optic network installed that is owned and operated by Platte River Power Authority (PRPA). This is being used for the SCADA system to the substations themselves at no cost. However, if additions are made beyond substation SCADA, additional costs may be incurred for the use of this network if fiber is leased from PRPA.
SCADA and AMI systems both require a fast communication channel and a fiber optic network owned and operated by the electric utility is an ideal medium. These systems increase the utilities ability to monitor and control the power system.

If the fiber optic network and AMI system were installed, this could be integrated into an OMS. The city now uses a manual OMS system, and a fiber network would allow them to progress toward an automated OMS system.

The modern automated OMS system will typically gather, compile, and display information from a variety of sources including:

- Customer Information Systems (CIS): A computerized system used to track customer information, generate bills, issue service requests, and "manage" customer relationships by providing the utility information about each customer's needs and preferences.
- Interactive Voice Response (IVR) system: Interactive computer system which can answer telephone calls, route information, compile data, return calls, and call back customers as programmed. It can be linked to record customers' locations and link these with locations in the distribution system.

- Call Overflow (COF) systems: A system that redirects telephone calls from one answering location to another when volume exceeds capacity. It allows overflow calls to be answered and information tabulated.
- SCADA status information: A computer system that gathers data from devices such as protective relays, provides breaker, switch, and re-closer statuses and a means to control these devices remotely, and displays the status of this monitored equipment graphically.
- Distribution Automation (DA) systems: Computer system which monitors and controls devices on the distribution system. May include monitoring and controlling breakers, re-closers, and distributed generators.
- AMI systems: Systems which can remotely read kWh from meters and automatically record the values in a computer data base. Some systems can also send instantaneous values to the system reading the meter. Meter data can be transferred via radio, telephone, or power line carrier. Also includes two-way communication to make possible remotely disconnecting customers or in other ways manage demand.
- Protective relay fault location information: Protective relays are devices on the power system which trip breakers to disconnect parts of the system experiencing malfunctions, such as short circuits or open conductors. The OMS may be informed if a relay has detected a problem on part of the system and has tripped a breaker. This will help the OMS characterize the reason for an outage.
- Geographic Information Systems (GIS): A computer based technology to collect, record, and display geographically referenced or spatially oriented information. Can record the exact locations of utility infrastructure and attach to those records construction information, life, or repair data. Can produce graphic displays which compile and usefully display data concerning components in a power system.
- Automatic Vehicle Locator (AVL) systems: Uses global positioning system information to automatically record in near real time the location of vehicles in a utility's fleet. Can display on a GIS based system the location of all line trucks or other vehicles so dispatchers can determine the truck located nearest an outage.
- Crew reporting information[10]

The object of this system is to give operator real time data that can be of considerable help when restoring power especially during wide-spread outages.

One successful method that has been used by other utilities is to use the existing electrical substations for fiber hubs. The fiber network backbone would be built to the substations and used at first for substation security and SCADA. This would allow the city to own the fiber network instead of depending on the PRPA for fiber for the SCADA system. Loveland's electric utility could expand their own fiber network and add an AMI or other distribution automation systems and finally integrate this into an automated OMS as future funds became available.

The estimated cost to connect the seven substations in Loveland together with a fiber ring installed underground in existing right-of-way, including the cost of equipment necessary to use this network for the electric utility's SCADA system are shown in Table 20.

Table 20: Approximate cost of fiber ring to the Loveland substations.

Cost Item	Estimated Cost
Underground fiber ring installed to 7 Substations (approx. 29 miles of fiber)	$5,800,000.00
Integration and additional end-use equipment	$350,000.00
Total Estimated Cost	$6,150,000.00

The estimated construction schedule is shown in Table 21.

[10] Nielsen, T.D. (2002). "Improving Outage Restoration Efforts Using Rule-Based Prediction and Advanced Analysis." *IEEE Power Engineering Society Winter Meeting 2002*, Vol. 2, January, pp. 866-860.

Table 21: Construction schedule: fiber ring to substations.

	2015												2016												2017								
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
1																																	
2																																	
3																																	

1. Engineering
2. Equipment Procurement
3. Construction

One thing to consider with this plan is that the city is presently getting the use of PRPA's fiber network at no cost, resulting in the new fiber installation having no real pay-back until the AMI or other metering infrastructure were installed. The fiber would be left dark until such time that additional investment in the metering infrastructure was planned. Even after that the payback would be hard to determine.

Another alternative that might be considered is that if the PRPA fiber ring between the substations is adequate and can be used for the AMI system, then the available funds could be used to begin installing fiber to each home as part of a larger commitment that would eventually connect all customers to a fiber network. This would allow better monitoring of the condition of the distribution system. If the PRPA owned fiber continues in use for the fiber backbone, fiber could be then installed to approximately 5,200 customers with the available $9.1 million. In the future the infrastructure could be added to include all customers.

Projects to support present needs of various city departments

The second group of projects that may be considered are fiber projects that would benefit other city agencies. Among the agencies in Loveland using fiber communications at this time are:

1. Fire department
2. Traffic department
3. City utility departments
4. Libraries
5. Water/wastewater department

Many if not all of these agencies could be benefited by projects improving the fiber network in Loveland. Instead of one single large project, several smaller projects could be identified that would improve the fiber network used by the city. For the available $9.1 million approximately 45 miles of underground fiber could be installed.

One area of concern that has been identified is the redundancy of the fiber network. The loss of a single fiber path could disable communications to some city facilities. Careful planning and construction would make it possible to have a system that could continue to operate normally even with the loss of part of the system. Projects could be implemented to improve the redundancy of the North, West, and South fiber rings. This redundancy could have substantial benefit by preserving communication to critical agencies during emergencies. Some sample projects might be:

1. Extending fiber to the water treatment plant
2. Extending fiber to the waste water treatment plant
3. Installing fiber along the Hwy 402 to I-25 corridor and then to the airport
4. Installing fiber for redundancy to the West Substation
5. Installing fiber as necessary to make the North, South and West fiber rings completely redundant.

Under this plan the City would identify and prioritize a number of projects for which part of the available funds would be earmarked. These projects would then be undertaken to remedy discrepancies in the present fiber network.

Fiber owned and used by a City owned broadband retail internet provider

Another option that may be chosen is to install the fiber as the first part of a larger fiber system that would include all the existing fiber installed in Loveland and eventually be extended to provide broadband internet citywide to both city and retail customers. This could be done through the city forming their own communications company to provide broadband internet services. The first question that may arise is concerning the legality of this option. Before attempting to provide communications services to retail customers in Loveland the City should ensure that this option meets state law. State law would appear to prohibit this option at this time.

Assuming the legality of this option, the city's facilities are already being supplied by a fiber network that could eventually become part of the citywide fiber system. The ability to provide broadband service to all customers in Loveland using a city owned municipal communications company would mean a long-term commitment that would go far beyond the initial investment of $9.1 million and would take considerable effort at the beginning of the project to form the company and plan the construction of its facilities.

One way this type of network may be installed would be to install fiber to a limited number of customers under the first phase of the total system build-out. This would make it necessary to establish the city-owned communications company at the beginning of the project so when the fiber was installed to the customers the company and its facilities would be prepared to deliver service.

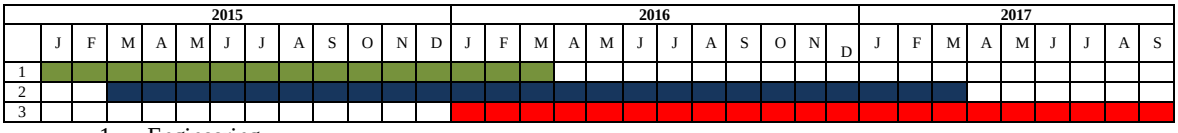
The system might be grown by first installing the initial trunk fiber to hubs located at one or two existing electrical substations, and built out from these hubs to surrounding customers. In this way a relatively large number of customers could be connected for the initial investment. If the substation chosen was near the communications backbone and central office the number of customers connected for the initial investment could be maximized. After the initial customers were connected and producing revenue the network could be gradually extended until it included all the substations as hubs and eventually all the customers in Loveland. Since this would extend the fiber infrastructure to each substation and customer, this network could also be used for electrical system SCADA to the substations, a future AMI system and an automated OMS. For the initial $9.1 million investment approximately 4500 customers could be connected to the system. A general cost estimate is shown in Table 22.

Table 22: Estimated cost

Cost Item	Estimated Cost
Central office and equipment	$1,100,000.00
Fiber trunk line to one substation	$350,000.00
Fiber lines to customer and end use equipment—4500 customers	$7,650,000.00
Total Estimated Cost	$9,100,000.00

The estimated construction schedule is shown in Table 23. This schedule does not include the time necessary for forming and planning the communications company.

Table 23: Construction schedule: broadband network.



1. Engineering
2. Equipment Procurement
3. Construction

Projects for future use by a commercial communications or internet provider

Another model that has been used by other municipal utilities is to install dark fiber that is either used in the future by the city or leased or sold to another communications company for the future installation of a broadband

system. This model has been less successful; with some municipalities finding they eventually must sell the fiber network they have installed to a communications company for a nominal cost and then make back their initial investment by leasing the utility's infrastructure, such as poles and right-of-way, to the communications company. The communications company is responsible for maintenance and expansion of the fiber network and servicing the customers connected to the system.

Under this scenario, the city could once again install a fiber network to the substations that would not be used until such time that the network was leased or sold to an outside company. Installation cost and schedule would be the same as shown in Table 20 and Table 21. Many utilities using this model have found that the payback period of this at present lease rates is 40 years or more. It is suggested that if this model is used the city have in place a definite plan that includes the company that will be using the fiber, when the fiber network will be operational, and the revenue that will be returning to the city under the contracts with the communications company used.

Comparison of projects

Of the types of projects considered in this section of the report, the one that appears most valuable is the project that would add redundancy to the system and install the fiber network to the facilities where it is presently inadequate. This alternative would include identifying several projects of this type be identified and prioritized. The $9.1 million is then budgeted to complete as many as possible in the order of priority. The other projects, adding fiber for distribution system automation, and automated OMS, or adding fiber as the first task in a complete communications system to each customer, all have value but will take a much larger and prolonged commitment of money and effort by the city. And if the projects are not completed, the original $9.1 million would be spent for naught.

4. New Boedecker Substation

In the recent flooding the drainage ditch adjacent to the West Substation was damaged. Part of the road serving the substation was also damaged and the slope supporting the southwest side of the substation was at risk. The damage was mainly due to erosion caused by the moving water. The substation and the areas that were damaged are shown in Figure 9

One possible solution to prevent damage to the substation from future flooding is to construct the Boedecker Substation at the site shown in Figure 7 and eventually remove the West Substation from service. A transmission line passes near the new site and it is assumed that this line could be intercepted and a tap used to feed the Boedecker Substation. The cost of the routing the transmission line into the substation would be incurred by PRPA.

A major expense and the major expenditure in time for this project will be due to building circuits to connect the new substation to the existing distribution circuits so the existing West Substation circuits could be fed from the Boedecker Substation when needed. This effort will take detailed planning and it may be difficult to get this work done in the allotted time. Some of the distribution construction may have to be completed after the project deadline.

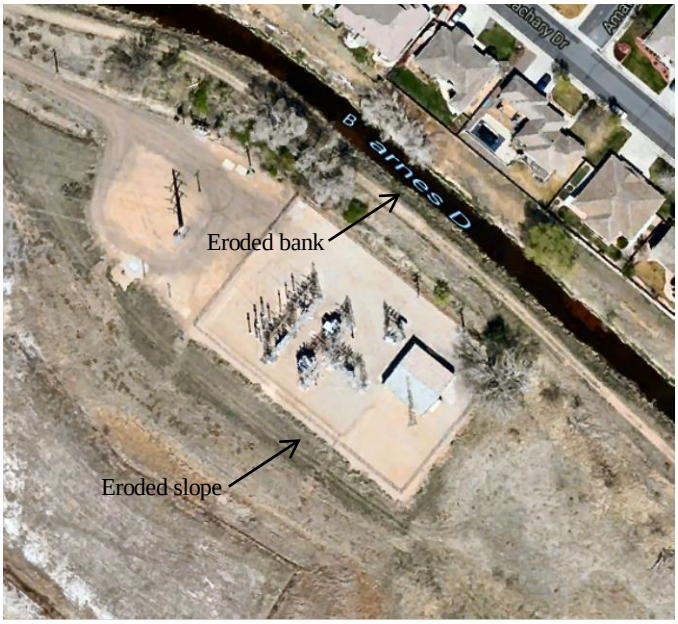


Figure 9: West Substation showing areas that suffered erosion.

Assuming the transmission line would be overhead and the existing 12.47kV feeders from the existing West substation would be fed from to the Boedecker Substation underground, and using $507,000.00/mile for the cost of underground feeder construction, a very rough estimate of the construction costs required for this project are shown in Table 24 and the anticipated construction schedule is shown in Table 25.

Table 24: Boedecker Substation Project Estimate.

Cost Item	Estimated Cost
Substation Construction	$4,200,000.00
Total Estimated Cost	$4,200,000.00

Table 25: Construction schedule for the Boedecker Substation.

	2015													2016												2017								
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
1																																	
2																																	
3																																	
4																																	
5																																	

1. Engineering
2. Equipment Procurement
3. Transmission Line Construction
4. Substation Construction
5. Distribution System Construction

The benefit of this option is that Loveland will have the ability to take the West Substation out of service and feed the distribution load from the Boedecker Substation if needed. If future flooding threatens the West Substation this will give Loveland the option of switching the feeders to the Boedecker Substation and de-energizing the West Substation if needed. This will prevent long-term loss of power during emergency flooding conditions due to flood damage to the substation.

5. Improving the West Substation

Rather than building the Boedecker Substation, it may be possible to improve the West Substation site to make future damage to the existing substation from flooding less likely. There are two different alternatives that may be chosen. The first alternative is lining the ditch, shown in Figure 10, with concrete, improving the road

drainage, and placing rip-rap on the slope of the substation (Alternative 1 in Table 26). Included in this alternative would be paving the substation access road.

The second alternative consists of adding the rip-rap on the substation slope as proposed in Alternative 1, but building a retaining wall between the ditch bank and the substation rather than lining the ditch. In the case of either the retaining wall or lining the ditch with concrete, the improvements would start at the substation and follow the substation road to the point where it intersects Namaqua Rd.

Figure 10: Ditch near West Substation.

If the retaining wall alternative is chosen there are two choices to consider. The first is a concrete cantilever wall (Alternative 2a in Table 26); the second is a gravity wall (Alternative 2b in Table 26). Before the gravity wall is chosen a more detailed analysis of the site will be needed to determine if the design of this type of wall can perform satisfactorily in this application. The alternative used for improving ditch stability would require coordination with the Ditch Company.

Table 26: Estimated cost for improvements to the West Substation.

Improvement	***Alternative 1***	***Alternative 2a***	***Alternative 2b***
Concrete Ditch Liner	$1,850,000.00		
Road Drainage Improvements and paving	$130,000.00		
Cantilever Retaining Wall		$6,800,000.00	
Gravity Wall			$1,750,000.00
Rip Rap	$100,000.00	$100,000.00	$100,000.00
TOTAL	$2,080,000.00	$6,900,000.00	$1,850,000.00

While further analysis will need to be done to choose between the alternatives shown in Table 26, our suggestion at this time is that Alternative 1 will produce the best results for the lowest cost. Table 27 shows the anticipated construction schedule for these improvements.

Table 27: Construction Schedule

	2015													2016												2017							
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
1																																	
2																																	
3																																	

1. Engineering
2. Equipment Procurement
3. Construction

Improvement of the drainage facilities at the West Substation should make it less likely that the substation will be damaged by future flooding. The benefit of this option is that during emergency flooding conditions in the future the probability will be reduced that power will be lost on a long-term basis due to damage to the substation.

CONCLUSIONS

Comparison of the value of each of the projects considered is made more difficult due to the two different types of projects involved. The first type is meant to produce energy, and these are simpler to compare to each other than the other type which consists of upgrading existing facilities. It should also be noted that if in the future Loveland increases its customer base to 40,000 customers, or the current Renewable Energy Standards law is modified, Loveland may be required to participate in providing renewable energy aside from their energy purchased from PRPA; the power producing projects proposed will probably qualify for the State's renewable energy portfolio. This may also add value to those projects which generate energy.

While there are many ways to compare projects of this type, the comparison in this report was made based upon the present worth of each of the energy producing projects and the avoided cost of the energy that would otherwise be purchased from PRPA compared to the present value of Loveland's costs. This comparison is shown in Table 28.

Table 28: Comparison of project costs to avoided costs for each power producing project.

Project		Project Present Worth	Project Present Worth to Loveland (excludes FEMA funds)	Generated Electricity Present Worth	Percentage of Total Project Cost Repaid by Avoided Electrical Costs	Percentage of Loveland's Costs Repaid by Avoided Electrical Costs
Value Plastics Solar	Fixed	$12,384,859.84	$3,284,859.84	$9,068,454.89	73.22%	276.07%
	1-axis	$12,991,326.80	$3,891,326.80	$11,367,541.54	87.50%	292.13%
I-25 and Hwy 402 Solar	Fixed	$13,033,568.88	$3,933,568.88	$7,459,123.46	57.23%	189.63%
	1-axis	$13.518,393.31	$4,418,393.31	$9,350,203.18	69.17%	211.62%
Airport Solar	Fixed	$17,393,458.76	$8,293,458.76	$9,247,269.49	53.17%	111.50%
	1-axis	$17,949,548.87	$8,849,548,87	$11,591,690.24	64.58%	130.99%
Larger Boedecker Solar Project	Fixed	$11,475,800.76	$2,952,116.55	$8,402,941,89	73.22%	284.64%
	1-axis	$12,197,986.31	$3,564,652.98	$10,673,747.92	87.50%	299.43%
Boedecker Solar Project	Fixed	$6,251,295.91	$1,651,295.91	$4,700,269.58	75.19%	284.64%
	1-axis	$6,567,688.44	$1,967,688.44	$5,891,908.85	89.71%	299.43%
Hydroelectric Plant		$2,094,241.30	$289,241.30	$978,196.78	46.71%	338.19%

The plants that come the nearest to paying off their total costs are the Value Plastics or Boedecker Solar projects. They both pay off nearly 90% of their construction costs during their expected lifetimes. The project that appears to be the most financially beneficial to Loveland over the total lifetime of the plant is the hydroelectric power plant which can be expected to pay back over three times its cost to Loveland.

In the case of PV systems, the choice between installing a fixed or a 1-axis system is one of cost and maintenance needed. In all cases a 1-axis system will produce the most energy at the lowest cost even though the maintenance needed will be more than for a fixed system. The additional energy produced, however, might not be worth dedicating the use of personnel or a third party operator to provide this additional system operation and maintenance. If the city decides it is willing to dedicate personnel or a contractor to maintain the system, then the 1-axis system should be chosen. If the city decides it would rather not have to dedicate more resources than necessary for maintenance purposes, then the fixed system should be chosen.

In light of all the aforementioned information given for each project, the following projects were selected for consideration by FEMA.

1. PROJECT OPTION 1
   A. Construction of the Boedecker Substation—Constructing a new substation at the Boedecker Property.
   B. Boedecker Solar Project—Constructing an approximately 1.8 MW fixed or 1.6 MW 1-axis solar photovoltaic power plant at the Boedecker Property

2. PROJECT OPTION 2
   A. Larger Boedecker Solar Project—Constructing an approximately 3.3 MW fixed or 2.9 MW 1-axis solar photovoltaic power plant at the Boedecker Property

3. PROJECT OPTION 3
   A. Value Plastics Solar Project—Constructing an approximately 3.5 MW fixed or 3.1 MW 1-axis solar photovoltaic power plant at the Value Plastics site.

4. PROJECT OPTION 4
   A. Hydroelectric Power Plant—Install an approximately 275 kW hydroelectric power plant at the Loveland Water Treatment Plant.

Attachment C

City of Loveland

DEPARTMENT OF WATER AND POWER

Service Center • 200 N. Wilson Avenue • Loveland, CO 80537
(970) 962-3000 • (970) 962-3400 Fax • (970) 962-2620 TDD
www.cityofloveland.org

December 5, 2014

SENT VIA EMAIL

Johan Barrios
Colorado Office of Emergency Management
9195 E. Mineral Avenue, Suite 200
Centennial, Colorado 80112
johan.barrios@state.co.us

Re: PW00602 – City of Loveland Request for Preliminary Input on Draft Project Description

Dear Ms. Barrios,

The City of Loveland Water and Power Department (the "City") submits the enclosed informal, draft project descriptions to seek preliminary input from COEM and FEMA on several possible alternate projects the City is considering for use of the fixed estimate of $9,068,018 described in the Fixed Subgrant Agreement Letter. This submittal seeks initial feedback in order to inform the final project proposal, which the City intends to submit to you in mid-January 2015, in hopes that the submittal could then be sent to COEM and approval obtained from COEM and FEMA by March 14, 2015.

We have copied Kevin Helland of FEMA on this correspondence. Given the short timeframe within which feedback is needed, and that many of the questions posed and most of the input sought pertains directly to FEMA's alternate project program, FEMA's input as well as COEM's input is critical to have as soon as practicable; and therefore we request that COEM and FEMA review this concurrently.

We understand and agree that any preliminary input provided in response to this draft submittal is not binding on either COEM or FEMA and would only be provided as a courtesy to the City.

As background, the Fixed Subgrant Agreement Letter is pursuant to PW00602, which applies to the Idylwilde Dam, Penstock and Power House ("Hydroelectric Facility"), damaged in the flood on September 14, 2013. Because the Hydroelectric Facility had been similarly damaged in two major floods, first in 1976 and again in 2013, the City determined public welfare

would not be best served by restoring the damaged hydroelectric facility again. Therefore, pursuant to 44 C.F.R. § 206.203(d)(2), the City seeks to perform an alternate project.

In this informal submittal, we describe four possible alternate projects, and seek feedback as to whether the projects would be approvable or whether there are certain components of projects that may need to be modified in order to be approvable. We also enclose specific questions regarding the FEMA alternate project program, and how it may apply to the described project options. In the end, the City's intent is to choose one of the four possible projects described herein. However, depending on your feedback, the City may explore some variation or combination of the projects described. For example, the City may decide to construct a smaller solar project, as well as a substation. Whether a single project or multiple projects are selected, the costs will either remain at or below the fixed subgrant, or, to the extent costs exceed the fixed subgrant amount, the City will bear the additional costs.

As an approach we have found very effective leading to discussion on the alternate project the City requests an in person meeting, or alternatively a conference call, with both COEM and FEMA, during which we can discuss the four possible projects, answer any questions you may have and, ideally, obtain your feedback.

We seek your early input prior to submittal of a formal proposal because the City's process requires the Loveland City Council ("City Council") to vote on an alternate project proposal before it is submitted to COEM, and ultimately to FEMA. Prior to submittal to City Council we want to assure that we have identified and addressed issues that may prevent COEM or FEMA's ultimate approval.

In order to ensure the City is able and allowed to proceed with construction upon approval and completion of the environmental and historic preservation reviews, and meet the regulatory deadlines (as may be extended by COEM and FEMA, if granted) the City's current proposed timeline is as follows:

1. December 5, 2014 – City's informal submittal to FEMA and COEM for early guidance

2. Early/Mid-December 2014 – Ideally, meet with FEMA and COEM to discuss the possible alternate project options

3. January 6, 2015 – City's regular meeting with the City Council to discuss possible alternate projects

4. Mid-January 2015 – City's formal alternate project proposal submittal to FEMA and COEM

Given that per FEMA regulations, the deadline for work would be March 14, 2015, the City is currently working to submit a request for a 30-month extension from COEM.

We greatly appreciate your willingness to review the enclosed draft alternate project descriptions. We look forward to discussions with you on this matter. Please contact Brieana Reed-Harmel at (970) 962-3592 or Brieana.Reed-Harmel@cityofloveland.org with any questions you may have. We plan to reach out to you within the next week or so to discuss scheduling a meeting or conference call to further review the project descriptions provided in the enclosure.

Sincerely,

Stephen C. Adams
Water and Power Director

Enclosures

Cc:
Walter Estep, FEMA – Walter.Estep@fema.dhs.gov
Kevin Helland, FEMA – Kevin.Helland@fema.dhs.gov
Brent Worthington, City of Loveland, Finance Director – Brent.Worthington@cityofloveland.org
Judy Schmidt, City of Loveland, Acting City Attorney – Judy.Schmidt@cityofloveland.org

FOR INFORMAL COEM AND FEMA REVIEW
City of Loveland
Summary of Possible Alternate Projects
December 5, 2014

The City is considering the following four project options. The City has determined that each of the project options described below will provide a benefit to the general public previously served by the damaged hydroelectric facility by providing a new or improved power source and increasing the reliability of power for the City's utility customers. In the final alternate project proposal, the benefit of the selected project(s) will be described in more detail.

For ease of reference, the descriptions of each project option below, are organized in sections designated as A, B and C, follow the criteria set out in 44 C.F.R. § 206.203(d)(2)(v).

Project Option 1 – Boedecker Substation and Boedecker Solar Projects

Project Option 1 entails two distinct components: (1) the construction of a new substation, referred to as Boedecker Substation, and (2) the construction of a solar project, referred to as Boedecker Solar Project. First we describe the project option as it pertains to the Boedecker Substation (Project Option 1, Part 1), and next, the project as it relates to the Boedecker Solar Project (Project Option 1, Part 2).

Project Option 1, Part 1 – Boedecker Substation:

A. Detailed Description of the Proposed Alternate Project

Facility description and scope of work: The Boedecker Substation work would entail the construction of the substation and acquisition of new units and equipment for the substation. The project would begin with planning, design and engineering work, and conclude once the substation construction is completed.

Facility owner: The City would own Boedecker Substation and be responsible for maintenance and repairs as an owner.

Facility operator: While the City would be responsible for operations, consistent with the practice at the City's existing substations, the City would contract the normal maintenance function to Platte River Power Authority, the quasi-public entity owned by the City and nearby municipalities. The City would carry insurance to cover the facility.

Location: Boedecker Substation would be located at a site bordering County Road 21, north of the intersection with 14th Street SW, within Larimer County. If this substation were to be constructed along with the solar project, as proposed in this Option 1, the substation would be immediately east of the solar field, abutting County Road 21. The property is not located in a regulatory floodplain or in a 100-yr floodway.

The property on which the Boedecker Solar Project would be located is owned by the City of Loveland Water and Power Department. The City owns 29.75 acres at this site, about 4 to 5 acres of which would be used for the substation.

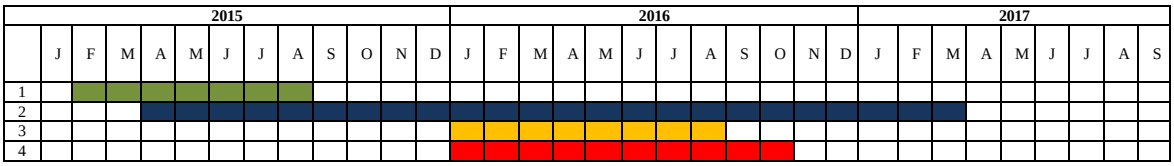
Insurance: The City will insure the project as needed and consistent with its general policies.

Environmental historic preservation review: The City plans to perform the required environmental and historic preservation reviews prior to the commencement of construction. To the extent the City may be required to obtain approval from the County pursuant to requirements known as the 1041 Regulations, which per the Loveland Land Use Code, may require a County review process and permit, the City will comply with these requirements as well.

B. Schedule of Work

The City plans to seek a 30-month extension from the State due to the time needed to obtain equipment and construct the substation. The following is a general timeline for construction. Prior to beginning the construction work shown below, NEPA and NHPA reviews would be completed.

Construction schedule for the Boedecker Substation



1. Engineering
2. Equipment Procurement
3. Transmission Line Construction
4. Substation Construction

C. Projected Cost of the Project

The total estimated cost for the Boedecker Substation project is approximately $4,200,000. Because this project is significantly less than fixed subgrant amount of approximately $9,100,000, the City would propose construction of the Boedecker Substation along with the Boedecker Solar Project option described immediately below. Both the projects under this Option 1 (Boedecker Substation along with the Boedecker Solar Project), total are not expected to exceed the approximate $9,100,000 million fixed subgrant. However, if costs exceed the fixed subgrant amount, the City would pay for the excess costs using City funds.

Project Option 1, Part 2– Boedecker Solar Project:

A. Detailed Description of the Proposed Alternate Project

Facility description and scope of work: The Boedecker Solar Project would entail the construction of a solar-powered generation facility, and the acquisition of associated equipment and parts. This project would also entail installing at least one circuit and connecting the solar project to the City's distribution system.

This solar project would entail either a fixed system of solar panels or a 1-axis tracking system that keeps the solar panels pointed to the sun from sunrise to sunset. Given that this Project Option 1 entails two components, the solar project would likely be limited to a 1.9 to 2.2 MW facility.

The project would begin with planning, design and engineering work, and conclude once the solar project construction is completed, and is connected to the City's distribution system.

Facility owner: The City would own the Boedecker Solar Project and be responsible for maintenance and repairs as the owner.

Location: The Boedecker Solar Project would be located at a site bordering County Road 21, north of the intersection with 14th Street SW, within Larimer County. If this solar project were to be constructed along with the Boedecker Substation as proposed in this Option 1, the Solar Project would be immediately west of the substation, abutting County Road 21. The property is not located in a regulatory floodplain or in a 100-yr floodway.

The property on which the Boedecker Solar Project would be located is owned by the City of Loveland Water and Power Department. The City owns 29.75 acres at this site, about 14 to 17 acres of which would be used for the Boedecker Solar Project.

Facility operations: The City would be responsible for operations and maintenance, and would hire a contractor to perform maintenance activities.

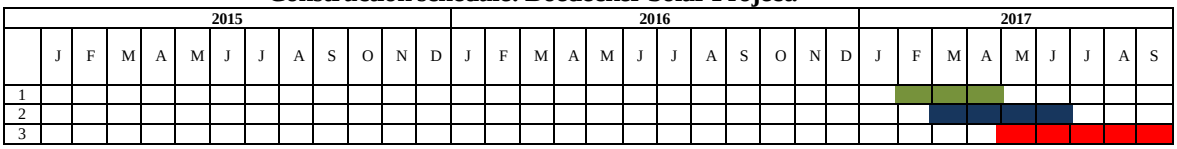
Insurance: The City will insure the project as needed and consistent with its general policies.

Environmental historic preservation review: The City plans to perform the required environmental and historic preservation reviews prior to the commencement of construction.

B. Schedule of Work

The City plans to seek a 30-month extension from the State due to the time needed to obtain equipment and construct the substation. The following is a general timeline for construction. Prior to beginning the construction work, NEPA and NHPA reviews would be completed.

Construction schedule: Boedecker Solar Project.



1. Engineering
2. Equipment Procurement
3. Construction

C. Projected Cost of the Project

Estimated cost of this project option is $4,900,000. Both the projects under this Option 1 (Boedecker Substation along with the Boedecker Solar Project), total are not expected to exceed the approximate $9,100,000 million fixed subgrant. However, if costs exceed the fixed subgrant amount, the City would pay for the excess costs using City funds.

Project Option 2 – Larger Boedecker Solar Project

A. Detailed Description of the Proposed Alternate Project

Facility description and scope of work: The Larger Boedecker Solar Project would entail the construction of an approximately 2.8MW to 3.2MW solar-powered generation facility, and the acquisition of associated equipment and parts. This project may also entail connecting the solar project to the City's distribution line, which could possibly be achieved by connecting to an existing underground distribution line, assuming that line is adequately sized.

The project would begin with planning, design and engineering work, and conclude once the solar project construction is completed, and is connected to the City's distribution system.

Facility owner: The City would own Boedecker Solar Project and be responsible for maintenance and repairs as the owner.

Location: The Larger Boedecker Solar Project would be located at a site bordering County Road 21, north of the intersection with 14th Street SW, within Larimer County. The property is not located in a regulatory floodplain or in a 100-yr floodway.

The property on which the Boedecker Solar Project would be located is owned by the City of Loveland Water and Power Department. The City owns 29.75 acres at this site, about 25 acres of which would be used for the larger solar project.

Facility operator: The City would be responsible for operations and maintenance, and would hire a contractor to perform maintenance activities.

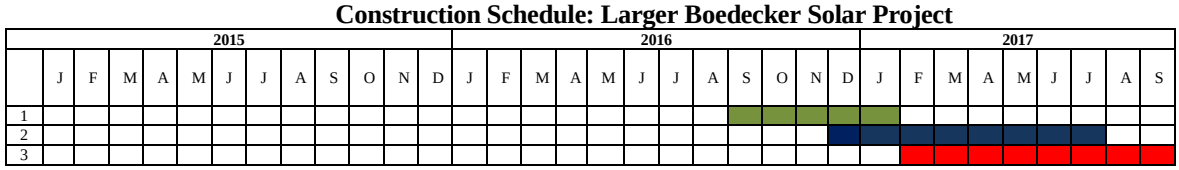
Insurance: The City will insure the project as needed and consistent with its general policies.

Environmental historic preservation review: The City plans to perform the required environmental and historic preservation reviews prior to the commencement of construction. In addition, to the extent the solar project may be subject to County permitting under what is known as the 1041 Regulations, the City would comply with any such requirements.

B. Schedule of Work

The City plans to seek a 30-month extension from the State due to the time needed to obtain equipment and construct the substation. The following is a general timeline for construction. Prior to beginning the construction work, NEPA and NHPA reviews would be completed.

Construction Schedule: Larger Boedecker Solar Project



1. Engineering
2. Equipment Procurement
3. Construction

C. Projected Cost of the Project

The estimated total costs of the solar project and interconnection are approximately $8,700,000. If costs exceed the approximate $9,100,000 million fixed subgrant, the City would pay for the excess costs using City funds.

Project Option 3 – Value Plastics Solar Project

A. Detailed Description of the Proposed Alternate Project

Facility description and scope of work: The Value Plastics Solar Project would entail the construction of approximately 3.1MW to 3.6MW solar power plant, and acquisition of the associated equipment and parts. In addition, the project would involve installation of an interconnection line to connect to the Horseshoe Substation located at the adjacent site.

The Horseshoe Substation is separated from the property on which the Value Plastics Solar Project would be located by a railroad right-of-way. There is an existing underground distribution line going underneath the railroad right-of-way that could possibly be used to interconnect to the system. As part of the project, an interconnection line would need to be installed from the solar project to the existing line.

This solar project would entail a 1-axis tracking system that keeps the solar panels pointed to the sun from sunrise to sunset. Given that this Project Option 3 entails only the solar project, it can be up to about 3.6MW, within the fixed subgrant.

The project would begin with planning, design and engineering work, and conclude once the solar project construction is completed, and is connected to the Horseshoe Substation.

Facility owner: The City would own the Value Plastics Solar Project and be responsible for maintenance and repairs as the owner.

Location: The project would be located at the site recently purchased by Value Plastics, 805 W. 71st. St., within Larimer County. The site is not located in a regulatory floodplain or in a 100-yr floodway. The City would not own the property but would have either (a) a long-term utility easement, or (b) a long-term lease for the solar project from Value Plastics, which would remain the owner of the underlying real property. The terms of the utility easement or lease would be such that the City would be responsible for maintenance and repairs of the solar facility.

Facility operator: The City would be responsible for operations and maintenance, and would engage a contractor to perform maintenance activities.

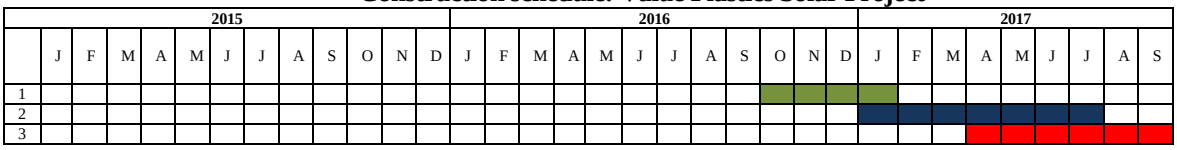
Insurance: The City will insure the project as needed and consistent with its general policies.

Environmental historic preservation review: The City plans to perform the required environmental and historic preservation reviews prior to the commencement of construction.

B. Schedule of Work

The City plans to seek a 30-month extension from the State due to the time needed to obtain equipment and construct the substation. The following is a general timeline for construction. Prior to beginning the construction work, NEPA and NHPA reviews would be completed.

Construction schedule: Value Plastics Solar Project



1. Engineering
2. Equipment Procurement
3. Construction

C. Projected Cost of the Project

The total estimated costs would be approximately $9,100,000. If costs exceed the approximate $9,100,000 million fixed subgrant, the City would pay for the excess costs using City funds.

Project Option 4 – Hydroelectric Power Plant

A. Detailed Description of the Proposed Alternate Project

Facility description and scope of work: The Hydroelectric Power Plant project would entail the construction of one in-line turbine at the City's existing Loveland Water Treatment Plant. This project would entail the acquisition of equipment and parts for the in-line turbine, as well as the installation of about 1,000 feet of overhead distribution line and equipment for the interconnection to the City's distribution system.

The project would begin with planning, design and engineering work, and conclude once the hydroelectric plant construction is completed, and is connected to the City's distribution system.

Facility owner: The City would own the Hydroelectric Power Plant and be responsible for maintenance and repairs as the owner.

Location: The project would be located at the Loveland Water Treatment Plant site, 3152 Waterdale Dr, within Larimer County. The site is not located in a regulatory floodplain or in a 100-yr floodway.

The City owns the underlying real property, as well as the Loveland Water Treatment Plant.

Facility operator: The City would be responsible for operations and maintenance, and would hire a contractor to perform maintenance activities.

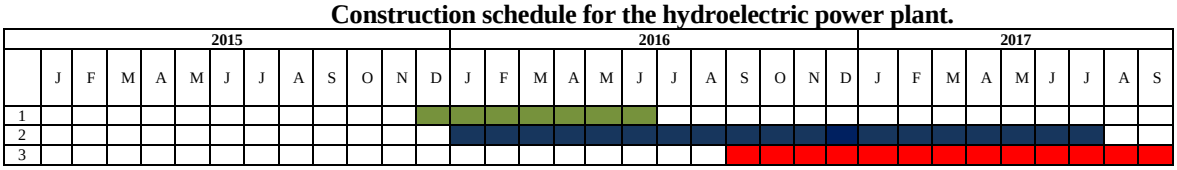
Insurance: The City will insure the project as needed and consistent with its general policies.

Environmental historic preservation review
The City plans to perform any required environmental and historic preservation reviews prior to the commencement of construction. The project will also require a FERC license, which the City will obtain.

B. Schedule of Work

The City plans to seek a 30-month extension from the State due to the time needed to obtain equipment and construct the substation. The following is a general timeline for construction. Prior to beginning the construction work, NEPA and NHPA reviews would be completed. In addition, the project would be require a FERC license, which would take about 6 months to obtain.

Construction schedule for the hydroelectric power plant.



1. Engineering
2. Equipment Procurement
3. Construction

C. Projected Cost of the Project

The total estimated costs would be approximately $1,800,000. Given the relatively low cost of this Option 4 project, this project would be constructed as a supplement to other project(s) to the extent there are sufficient remaining funds from the subgrant.

City of Loveland Questions for COEM and FEMA

Timing of reimbursement

1. In that the options being considered are all large projects, each in excess of at least $1 million, would FEMA issue reimbursements at certain phases of the work prior to completion, or would the entire sum of the costs at or below the fixed subgrant amount be paid out at the time of completion of all the projects?

Cost estimates in proposal

2. Given that the City has a fixed subgrant for an alternate project, and any excess amounts would be borne by the City, are estimated total costs sufficient information for the final project proposal (for approval by March 14, 2015)?

3. To the extent that actual costs exceed the fixed subgrant amount, the City will pay for the costs in excess. In the project proposal to be submitted by the City for final approval by March 2015, is it required that the submittal indicate the specific source of funds for the excess costs.

Completion of the work

4. If several projects are approved, the total of which cost approximately $9,100,000, and two of the projects are completed but one of the projects is not completed by the deadline, would the City still be reimbursed / awarded FEMA funds from the fixed subgrant for the two completed projects?

5. Following on the above question, if, by the project completion deadline in September 2017, capital equipment has been purchased for one of the projects but installation or construction was not yet completed for that project, could the City be reimbursed / awarded FEMA funds from the fixed subgrant for at least the cost of the purchase of the capital equipment?

6. What "constitutes completion of the work"? For example, if the Boedecker Substation is constructed by the work deadline, but the substation is not yet connected to the grid with a distribution line, is the substation work eligible for reimbursement?

Project changes

7. If, during planning, engineering or actual work, it is determined that the project scope must be modified, would the City (though COEM as grantee) be obligated to notify, or obtain approvals from FEMA? The following is an example scenario: The City (though COEM as grantee) selects a solar project option, and in the FEMA-approved project submittal, the solar project is described as being 3MW in size. Later, during planning or even during an early construction phase, the City determines the project will need to be smaller, 1MW, or larger, 4MW; therefore, the City would like to modify the scope, such as the size, of the project. If a modification such as this arises, would the City (though

COEM as grantee) be required to notify FEMA? Would the City (though COEM as grantee) be required to obtain advance approval from FEMA? Would such requirements change depending on whether costs would remain within the fixed subgrant amount, knowing that, to the extent costs may exceed the fixed subgrant, for any project option, City funds would be used to cover the costs in excess of the subgrant?

8. The question above assumes that the City, as subgrantee, would work with COEM, and COEM would be the entity submitting any necessary notifications and requests for approvals, is that assumption accurate in circumstances that may arise after project approval by FEMA?

Land, leasing or easement costs

9. If the alternate project is construction of a facility, such as a solar facility, is the cost to purchase the land for the facility eligible for reimbursement by a portion of the fixed subgrant?

10. If the alternate project is construction of a facility, where a perpetual utility easement or a linear easement such as for a utility line is purchased to allow use of the land, would the easement costs be eligible for reimbursement?

11. If the alternate project is construction of a facility, where the land is leased overtime, are these leasing costs eligible for reimbursement?

Planning, design and engineering

12. Since the fixed subgrant will not be increased or decreased, are costs for planning, design and engineering eligible for reimbursement where the expenditures for such were made in compliance with the FARs?

FARs

13. Generally, Platte River Power Authority, the quasi-public entity owned by the City and other nearby municipalities, performs the engineering and design work on all the City's substations. There is a pre-existing agreement providing for this arrangement between the City and PRPA. The agreement was not issued in compliance with FARs. Would the engineering and design costs be eligible for reimbursement from the fixed subgrant?

14. Typically, City employees perform some of the actual specialized electrical construction work for substations such as cable installation and installation of distribution equipment. If City employees perform some of this work, is the project still eligible? i.e., does the use of City employees for planning, construction or other work need to comply with FARs?

15. Assuming under FARs the use of City employees is allowable, what types of costs incurred by the use of City employees are reimbursable (direct costs, indirect costs, overhead costs, etc…)?

City of Loveland Questions for COEM and FEMA

The responses from the State and FEMA for each question are listed below in blue.

Timing of reimbursement

1. In that the options being considered are all large projects, each in excess of at least $1 million, would FEMA issue reimbursements at certain phases of the work prior to completion, or would the entire sum of the costs at or below the fixed subgrant amount be paid out at the time of completion of all the projects?
   The State makes progress payments on a reimbursement basis. The payments for PAAP are reimbursed the same as all other PA projects. Once Loveland receives an invoice, they may request reimbursement understanding that all of the reimbursement and documentation requirements must be met.

Cost estimates in proposal

2. Given that the City has a fixed subgrant for an alternate project, and any excess amounts would be borne by the City, are estimated total costs sufficient information for the final project proposal (for approval by March 14, 2015)?
   Yes, please provide estimates for completing the projects in their entirety including any costs that will be borne by the City.

3. To the extent that actual costs exceed the fixed subgrant amount, the City will pay for the costs in excess. In the project proposal to be submitted by the City for final approval by March 2015, is it required that the submittal indicate the specific source of funds for the excess costs.
   Yes.

Completion of the work

4. If several projects are approved, the total of which cost approximately $9,100,000, and two of the projects are completed but one of the projects is not completed by the deadline, would the City still be reimbursed / awarded FEMA funds from the fixed subgrant for the two completed projects?
   Yes. You will be reimbursed for all eligible activities that are within the project scope of work and completed within the allotted time period.

5. Following on the above question, if, by the project completion deadline in September 2017, capital equipment has been purchased for one of the projects but installation or construction was not yet completed for that project, could the City be reimbursed / awarded FEMA funds from the fixed subgrant for at least the cost of the purchase of the capital equipment?
   Yes, you will be paid for whichever eligible portions of the scope of work are completed. In this example, the installation or construction would not be reimbursable since it was not completed.

6. What "constitutes completion of the work"? For example, if the Boedecker Substation is constructed by the work deadline, but the substation is not yet connected to the grid with a distribution line, is the substation work eligible for reimbursement?
   Completion of work means completing what is outlined in the scope of work of the PW. Yes, the construction of the substation is eligible; but the connection costs would not be.

Project changes

7. If, during planning, engineering or actual work, it is determined that the project scope must be modified, would the City (though COEM as grantee) be obligated to notify, or obtain approvals from FEMA? The following is an example scenario: The City (though COEM as grantee) selects a solar project option, and in the FEMA-approved project submittal, the solar project is described as being 3MW in size. Later, during planning or even during an early construction phase, the City determines the project will need to be smaller, 1MW, or larger, 4MW; therefore, the City would like to modify the scope, such as the size, of the project. If a modification such as this arises, would the City (though COEM as grantee) be required to notify FEMA? Would the City (though COEM as grantee) be required to obtain advance approval from FEMA? Would such requirements change depending on whether costs would remain within the fixed subgrant amount, knowing that, to the extent costs may exceed the fixed subgrant, for any project option, City funds would be used to cover the costs in excess of the subgrant?
   Yes, the State and FEMA shall be notified of any and all changes prior to starting the work. The approval is not dependent upon costs but upon the area impacted and what environmental clearance is needed.

8. The question above assumes that the City, as subgrantee, would work with COEM, and COEM would be the entity submitting any necessary notifications and requests for approvals, is that assumption accurate in circumstances that may arise after project approval by FEMA?
   Yes. This is also applies to this request that is forthcoming.

Land, leasing or easement costs

All of these options can be further discussed once Loveland decides how they wish to proceed.

9. If the alternate project is construction of a facility, such as a solar facility, is the cost to purchase the land for the facility eligible for reimbursement by a portion of the fixed subgrant?
   Yes, purchasing land is eligible for reimbursement as part of an alternate project.

10. If the alternate project is construction of a facility, where a perpetual utility easement or a linear easement such as for a utility line is purchased to allow use of the land, would the easement costs be eligible for reimbursement?
    Yes, easements are eligible for reimbursement.

11. If the alternate project is construction of a facility, where the land is leased overtime, are these leasing costs eligible for reimbursement?
    No, leasing costs are not eligible as they are seen as an ongoing maintenance/operating cost of the facility.

Planning, design and engineering

12. Since the fixed subgrant will not be increased or decreased, are costs for planning, design and engineering eligible for reimbursement where the expenditures for such were made in compliance with the FARs?
    Yes, as long as they can be tied to the scope of work in the PW. Expenses that were incurred prior to the incident period are not eligible.

FARs

13. Generally, Platte River Power Authority, the quasi-public entity owned by the City and other nearby municipalities, performs the engineering and design work on all the City's substations. There is a pre-existing agreement providing for this arrangement between the City and PRPA. The agreement was not issued in compliance with FARs. Would the engineering and design costs be eligible for reimbursement from the fixed subgrant?
    Typically no, but we would need more information as to why the agreement is not in compliance. We have some alternatives depending on the issues with the agreement.

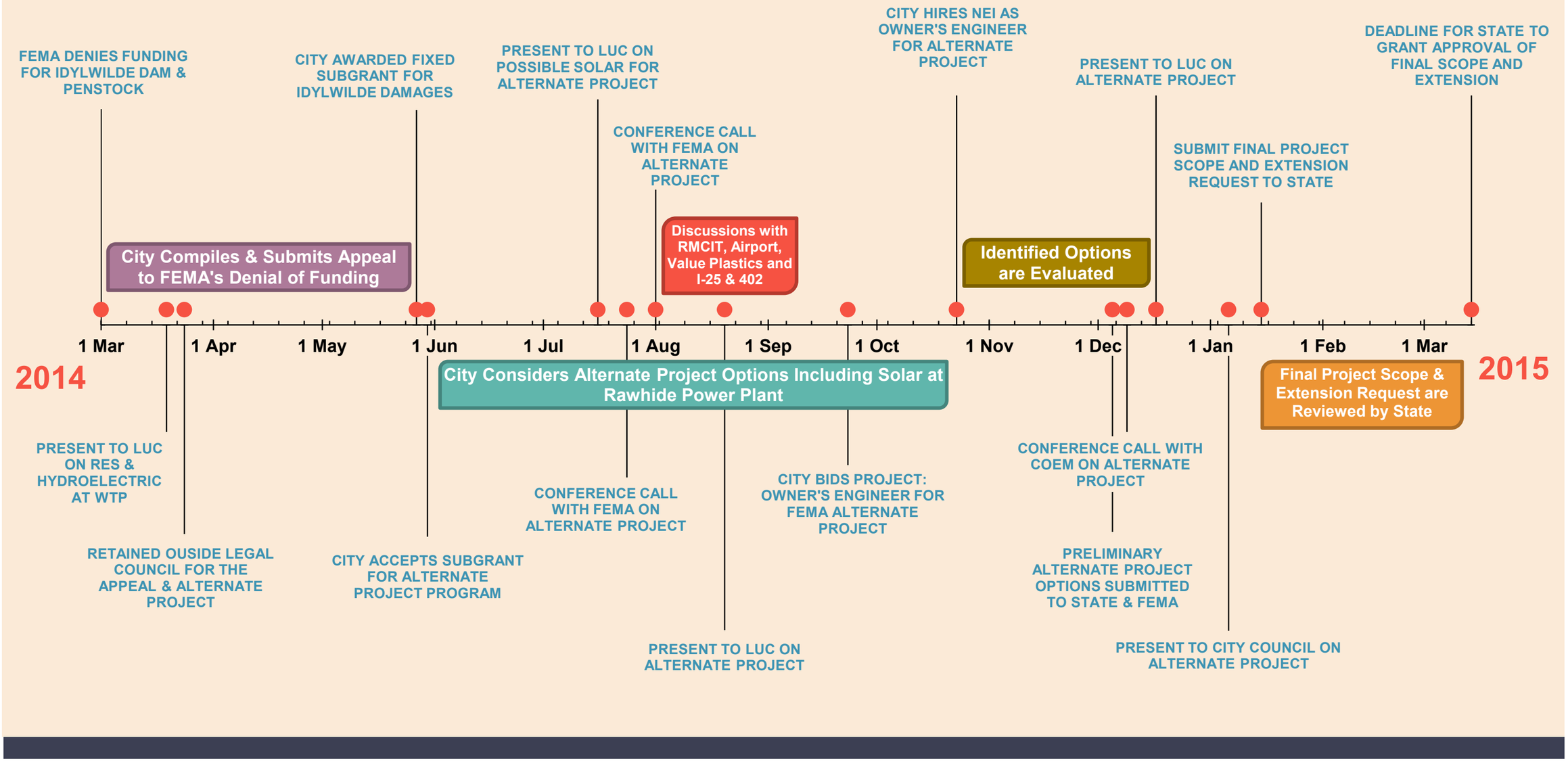
14. Typically, City employees perform some of the actual specialized electrical construction work for substations such as cable installation and installation of distribution equipment. If City employees perform some of this work, is the project still eligible? i.e., does the use of City employees for planning, construction or other work need to comply with FARs?
    This question is a little unclear. Are you referring to in house city employees who constitute force account labor? Or are you referring to contract employees? In house employees who are on your payroll do not need to comply with acquisition or procurement guidelines because it does not apply to them. Contract employees who work for the city might. We would have to discuss specifics to better answer this question.

15. Assuming under FARs the use of City employees is allowable, what types of costs incurred by the use of City employees are reimbursable (direct costs, indirect costs, overhead costs, etc…)?
    Direct costs that can be tied to the PW and specific PW activities are reimbursable. Overhead costs are reimbursable on a case by case basis depending on what you are referring to. Indirect costs are eligible as well. Please note that under the Public Assistance program, direct costs and indirect costs have specific definitions and there are activity lists that are associated with both. Any cost submitted for reimbursement must be an eligible activity and attributed to the project.

Attachment E

Project Options Evaluation for FEMA Alternate Project

TIMELINE



City of Loveland

CITY OF LOVELAND
WATER & POWER DEPARTMENT
200 North Wilson • Loveland, Colorado 80537
(970) 962-3000 • FAX (970) 962-3400 • TDD (970) 962-2620

AGENDA ITEM: 4
MEETING DATE: 12/17/2014
SUBMITTED BY: Tracey Hewson, Customer Relations Business Specialist

TITLE: PRPA Solar and Integrated Resource Plan Update

DESCRIPTION:
John Bleem and Brad Decker from Platte River Power Authority will present a draft of the Integrated Resource Plan (IRP), which is driven by guidance from Platte River's strategic plan and will provide recommendations for long-term resource portfolio decisions. They will also provide information about a potential solar project near the Rawhide Energy Station.

SUMMARY:
Future Resource Planning – The IRP will balance reliability, competitive rates, CO_2 emissions reduction and renewable energy integration. We have developed two preliminary scenarios for future resources – and have performed detailed operational and financial analysis on these scenarios. Results of this initial work will be reviewed by Platte River staff. They will also summarize next steps in the IRP development process and answer questions.

Rawhide Solar Project –In September, Platte River issued a request for proposals (RFP) for up to 30 MW of solar supply from a project that would be located at the Rawhide Energy Station. There was a strong response to the RFP, with twelve bidders providing proposals. Pricing is significantly lower than we have seen in the past and no transmission costs will be incurred for delivery of this energy since the project will be interconnected directly to the Rawhide substation. Energy from a 30 MW solar project would represent about 2% of total Municipal energy deliveries forecasted for 2016. A recommendation on the project will be made at the December 11, 2014 Platte River Board meeting. Platte River staff will provide a summary of the project and answer questions.

RECOMMENDATION: Staff item. No action required.

REVIEWED BY DIRECTOR:
AP for SA

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AGENDA ITEM: 5
MEETING DATE: 12/17/2014
SUBMITTED BY: Steve Adams, Director AP for SA

TITLE: Commission/Council Report

SUMMARY:
Discuss events that the Loveland Utility Commission Board members attended and any City Council items related to the Water and Power Department from the past month.

- The Colorado Water Congress and the Colorado Foundation for Water Education (CFWE) Webinar Series on Transbasin Diversions: Profiling a Colorado Transbasin Diversion - December 10, 2014
- City Council Study Session: City Council and Planning Commission Joint Meeting Create Loveland Update – December 9, 2014

RECOMMENDATION:
Commission/Council report only.

REVIEWED BY DIRECTOR:
AP for SA

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AGENDA ITEM: 6
MEETING DATE: 12/17/2014
SUBMITTED BY: Steve Adams, Director AP for SA

TITLE: Director's Report

SUMMARY:

- **Colorado Water Congress 2015 Annual Convention** – The Colorado Water Congress Annual Convention is the largest water conference in the state. Featuring presentations by prominent speakers, policy updates, and professional development for all water community members, this year's Convention promises to top the rest. See attachment A and B for the full schedule of conference events. Please contact Allison Prokop no later than December 31, 2014 if you would like to attend.

  Where: Hyatt Regency Denver Tech Center
  7800 East Tufts Avenue
  Denver, CO 80237
  When: January 28-30, 2015

Current Attendees:

- John Rust Jr.
- Gene Packer
- Dave Schneider
- Gary Hausman

- **Transbasin Diversion Webinar Series** – The Colorado Water Congress and the Colorado Foundation for Water Education (CFWE) are working together to bring you a series of webinars focusing on Transbasin Diversions in Colorado. The webinars will include a diverse range of panelists and presenters to expand upon CFWE's newest "Citizen Guide to Colorado's Transbasin Diversions."

  Please contact Allison Prokop if you would like to attend the following webinar. This webinar will be available to view at the Service Center.

  - *Changing Perceptions of Transbasin Diversions*
    - **Date:** January 8, 2015
    - **Time:** 9:30am-10:30am

Current Attendees:

- Dave Schneider
- Larry Roos
- Gene Packer
- Gary Hausman

- **2015 Northern Water Workshops** — Northern Water will be hosting a series of informational workshops. Please let Allison Prokop know if you are interested in attending any of the workshops.

  - **Location** – Northern Water Headquarters
    220 Water Ave.
    Berthoud, CO 80513

  - **Times** – 9:00am -11:30am and 1:00pm - 3:00pm

  - **February 18, 2015 – Operations** topics to be discussed include;
    - West Slope
    - USBR
    - Forecasting
    - Colorado River Interests
    - East Slope
    - Western
    - AOP
    - Modeling
    - Water Accounting
    - Water Quality
    - Water Allocation SCADA
    - Round-table discussions

  - **March 18, 2015 – Administration** topics to be discussed include;
    - Polies
    - Rules
    - Procedures
    - Contracts
    - Inclusions
    - Assessments
    - Ad valorem taxes
    - Financial Planning
    - Round-table discussions

  - **April 15, 2015 – Success and Challenges** topics to be discussed include;
    - Platte River Recovery Program
    - Colorado River Recovery Program
    - WGFP
    - NISP
    - Collection system projects
    - Distribution system projects
    - Colorado River
    - Colorado Water Plan
    - 2013 Floods
    - Water Quality
    - Watershed health/fire mitigation
    - Aging infrastructure
    - Round-table discussions

  - **May 13, 2015 – Follow-up**

- **Comprehensive Plan Update** — Staff will provide an update on the status of the Comprehensive Plan – Chris Matkins

- **First draft of the Colorado State Water Plan has been delivered to Governor Hickenlooper December 11, 2014** — This initiates a one year period of updating the Basin Implementation Plans (BIP's) and the state water plan itself. Final draft is due December 2015.

- **Home Energy Reports Program Update** — In late September 2014, LWP issued an RFP for the Home Energy Reports Program. Staff members from LWP and Utility Billing as well as the Chairman of the LUC reviewed five proposals and interviewed two companies that could offer LWP the products and services requested. Based on reputation in the industry, its track record and third party verification to achieve energy savings, LWP is has selected Opower Inc. for the Home Energy Reports program. The 2015 program will include all 29,000 residential electric customers. As an alternative to the past Home Energy Reports program, LWP will implement a program focused on digital outreach by tapering direct-mailed reports to quarterly reports and adding new communication channels through digital outreach. Existing customers in the program will continue to receive reports in 2015. New customers are scheduled to be introduced to the program early second quarter 2015. – Lindsey Bashline

- **PRPA SCADA Agreement Update** — On January 1, 2014 PRPA and the City of Loveland signed an agreement that allowed PRPA to provide SCADA Services to Loveland in its 7 substations. A few months ago Estes Park approached PRPA requesting SCADA services for their two substations. PRPA proposed to amend the existing agreement with Loveland and develop a new agreement with Estes Park. The only item that changes for the Loveland Agreement is the cost distribution for this service which will be amended to read that Loveland is responsible for 7/9's of the cost and Estes Park will be responsible for the other 2/9's. This agreement will result in a reduced cost to Loveland for this service now that Estes Park is also included. An Amended and restated intergovernmental agreement for SCADA services with PRPA and Loveland was adopted by the PRPA Board of Directors on December 11, 2014. Given the minor change to the original agreement I am routing this amended agreement directly to the Loveland City Council for their action on January 6, 2015. – Steve Adams

- **PRPA to Build Solar Energy Facility** — FORT COLLINS, Colorado – Today, the Platte River Power Authority Board of Directors unanimously authorized the acquisition of up to 30 megawatts (MW) of solar energy resources from a facility to be built at the Rawhide Energy Station north of Wellington, CO.

  The facility would occupy about 185 acres and include roughly 100,000 photo-voltaic panels. Construction could start as early as spring 2015 and take about twelve months to complete. Once in operation, the facility would produce electric energy equivalent to the average use of nearly 8,000 homes in Platte River's owner communities – Estes Park, Fort Collins, Longmont, and Loveland, Colorado. The Larimer County Board of Commissioners approved Platte River's 1041 land use permit application for the facility on December 8.

  "The addition of solar into our renewable mix is well aligned with our strategic initiative to diversify our generation resource portfolio," said Jackie Sargent, Platte River General Manager and CEO. "The new facility will be a great complement to our existing non-carbon emitting wind and hydro resources. As we plan for the future, expanding our pool of resources will help us to reduce carbon emissions and better manage risk."

About Platte River Power Authority
Platte River Power Authority is a not-for-profit wholesale electricity generation and transmission provider that delivers safe, reliable, environmentally responsible and competitively priced energy and services to its owner communities of Estes Park, Fort Collins, Longmont, and Loveland, Colorado for delivery to their utility customers. More information about Platte River can be found at www.prpa.org.

- **Celebration and signing of the Windy Gap Firming Project's Record or Decision and Carriage Contract** — Northern Water will be celebrating the signing of the Windy Gap Firming Project's Record or Decision and Carriage Contract. Lunch will be provided Event information is listed below. Please let Allison Prokop know if you would like to attend and if you plan on eating lunch

  When: December 19, 2014
  Time: 11:00am
  Where: Northern Water
  220 Water Ave.
  Berthoud, CO

- **Northern Colorado Business Innovation Conference** — Please see attachment C for all event information. If you would like to attend please contact Allison Prokop.

  When: January 29, 2015
  Time: 7am-5pm
  Where: Fort Collins Senior Center
  1200 Raintree Drive

RECOMMENDATION:
Director's report only.

REVIEWED BY DIRECTOR:
AP for SA

Attachment A

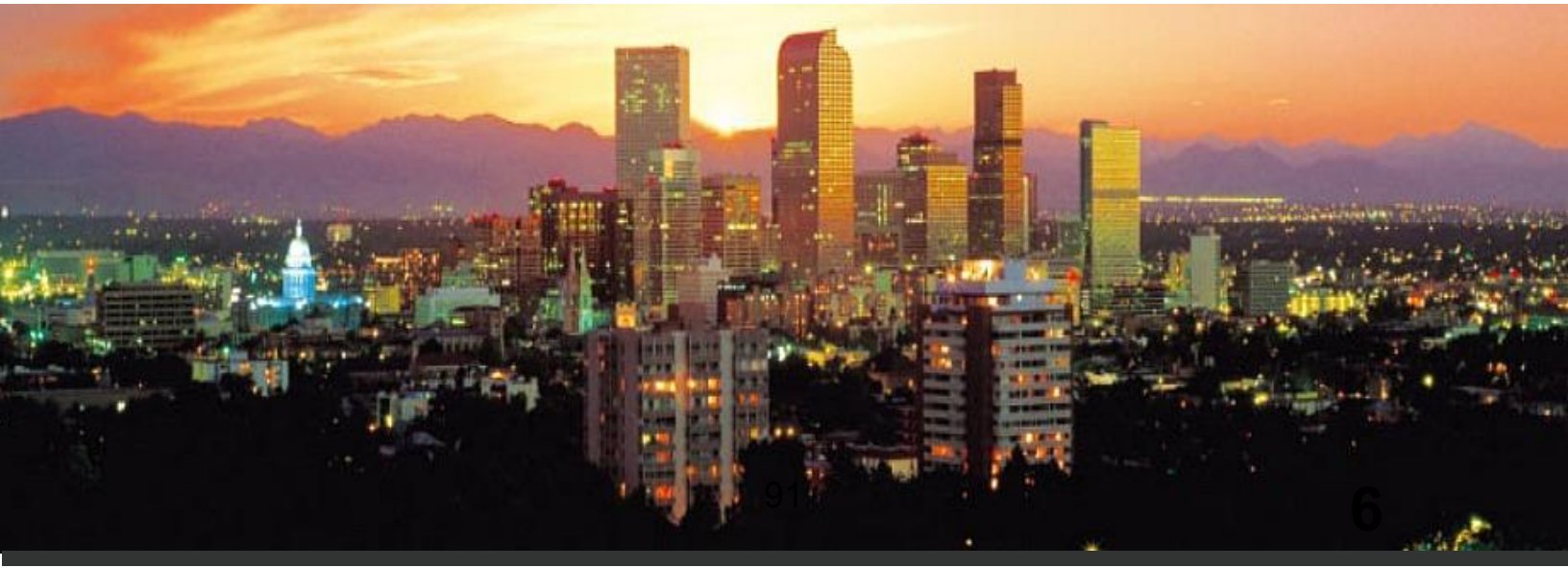
EST 1958

Colorado Water Congress
2015 Annual Convention

Rethinking Colorado's Water

January 28-30, 2015

Hyatt Regency Denver Tech Center



Thank You to Our 2015 Annual Convention Sponsors

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The 2015 Colorado Water Congress Annual Convention

Hyatt Regency Denver Tech Center

January 28 to 30, 2015

Rethinking Colorado's Water

All sessions will be in the Grand Mesa Ballroom unless otherwise noted

Share your experience and thoughts via social media

#RethinkingWater; @COWaterCongress

Wednesday, January 28

Wednesday Morning Workshops

8:30 – 11:30 am

See workshops program for complete description

Colorado Water Congress President's Luncheon

Winter General Membership Meeting

12:00 – 1:15 pm

Food service continues until 12:30

Program will be from 12:30 to 1:15

The Colorado Water Congress (CWC) President and Vice President will review our recent accomplishments and discuss priorities for 2015. The luncheon will be one of the best opportunities for members to provide input on the future course of the CWC and to share their views on CWC member benefits and organizational priorities. We will take action on business items including 2015 CWC Policies and confirmation of Board members.

Wednesday Afternoon Workshops

1:30 – 4:30 pm

See workshops program for complete description

Annual POND Networking Event

4:30 – 6:30 pm

Especially for our newer members, one of the biggest challenges in networking is meeting others in the water field for the first time. Our POND events are designed to provide an opportunity for attendees to interact in a fun and engaging way. As always, the event is top secret up until it begins, but you can expect another unique and interactive event. We promise to challenge your knowledge of Colorado's water community and facilitate creativity and teamwork. The event is free to anyone in the water community. Drinks and appetizers will be provided.

Thursday, January 29

Annual State Legislative Breakfast

7:00 – 8:15 am

Food service continues until 7:30

Program will be from 7:30 to 8:15

Panelists:

House Agriculture, Livestock, and Natural Resources Committee

Senate Agriculture, Natural Resources and Energy Committee

Members of the House and Senate Agricultural Committees will offer their perspectives on water policy and discuss legislative priorities for the 2015 session of the Colorado General Assembly. Our legislative breakfasts are designed to help build strong relationships between legislators and members of the water community. There will be an opportunity for audience questions

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Break

8:15 – 8:45 am

Opening General Session

Colorado's Water

State of the State

8:45 – 10:00 am

When the Governor kicked off the concept of a Colorado Water Plan 18 months ago, we began an intense period of thinking and rethinking our approach to water development, management, and conservation. We now have a substantive draft plan that reflects ample opportunity for public, water user, and legislative input. The process of drafting Colorado's Water Plan challenged the State's resources and required significant time commitment from Colorado's water community. From the State's perspective, what have we accomplished? What would the State like to see as the next steps for our water community in 2015?

"The prolonged drought with its tragic impact on the lives of many ranchers and farmers, has dramatized powerfully the urgent necessity of a county-by-county, watershed-by-watershed, basin-by-basin analysis of our total available surface and underground water supplies. We need objective measurement of our present consumptive uses of water, and to project our future requirements for domestic, agricultural, and industrial uses . . . . We must further study ways to avoid wastage in our present use of water. We must seek techniques to conserve above ground, and to store below ground, for future use, all water that we can store, with due regard to our commitments." (Governor McNichols, State of the State Address, January 18, 1957)

Break and Open Mic with Session I Speakers

10:00 - 10:30 am

General Session II

Colorado's Weather, Economy, and Politics-
In a State of Constant Change

10:30 – 11:45 am

Be it weather, economy, or politics; we are constantly watching the skies for the next storm. Looking for trends and forecasting outcomes, we attempt to position ourselves for success. What do our weather patterns portend for 2015? In almost every sector, strong economic growth is expected here in Colorado. Will this impact the timing of Colorado's water planning? We will scan the political horizon to understand how national political pressures may affect us as a battleground state. How will all these factors shape our thinking as we prepare for 2015?

Break and Open Mic with Session II Speakers

11:45 am – 12:15 pm

Thursday Luncheon

12:15 – 1:30 pm

Food service continues until 12:45
Program will be from 12:45 to 1:30

Blue Mind
Connecting with How People Think about Water
Dr. Wallace J. Nichols

"Why do we love water so much?" Dr. Wallace J. Nichols, author of the New York Times Bestseller, Blue Mind, has a new answer to an age-old question. Through neuroscience and psychology, Dr. Nichols explains the connection between the human brain and water, combing the practical and the intangible. Blue Mind is the "surprising science that shows how being near, in, on, or under water can make you happier, healthier, more connected, and better at what you do." Join us for a thought-provoking and interactive activity that will explore a human passion for water that exists beyond the realm of water professionals.

Break and Book Signing with Dr. Nichols

1:30 – 2:00 pm

General Session III

A Plan of Paper or a Plan of Action?
Identifying the Impediments for Implementation

2:00 – 3:15 pm

"The goals of the water plan are to defend Colorado's compact entitlements, improve the regulatory processes, and explore financial incentives all while honoring Colorado's water values and ensure that our state's most valuable resource is protected and available for generations to come. How do we preserve what we love about our State alongside (anticipated) population growth? The state will increase efficiency and effectiveness in water project permitting while . . . establishing a path to state endorsement of water projects. The draft plan is not the end of our story, rather it marks the beginning of a new chapter in Colorado water." These bold words in the Colorado Water Plan

may be the gauge used to measure its success. What gaps need to be addressed next year to ensure the full support of Colorado's water community?

Break and Open Mic with Session III Speakers

3:15 – 3:45 pm

General Session IV

A Broad View of the Colorado River

2:00 – 3:15 pm

In 2012, The United States and Mexico entered into Minute 319, arguably the most historic international agreement on the Colorado River since the signing of the 1944 U.S.-Mexican Water Treaty. In March of 2014, through significant work on both sides of the boarder, a pulse flow made its way through the Colorado River Delta to the Sea of Cortez. We will review Minute 319—the agreement to share in shortages and surpluses, the pulse flow to the Colorado River delta, and the challenges that were faced in getting it done. What do these accomplishments say about the future of international negotiations? What will future cooperative agreements look like? Will we see a Minute 320 soon?

Break and Open Mic with Session IV Speakers

3:15 – 3:45 pm

Colorado Water Congress Celebration Reception

5:15 – 7:00 pm

Centennial Room

Thursday Evening

Water Tables 2015

Partnering the Waters

Featured Keynote Speaker: The Honorable Ken Salazar

6:15 – 9:15 pm

A fundraiser to benefit the Water Resources Archive at the Colorado State University

Separate ticket is required for this event

Guests will be seated beginning at 6:15 pm
Food service continues until 7:15 pm

Friday, January 30

Annual Federal Affairs Breakfast

7:00 – 8:15 am

Food service continues until 7:30

Program will be from 7:30 to 8:15

Our Federal Affairs Committee directs Water Congress efforts on the national level. We also have an active role in the National Water Resources Association which advocates for federal policies, legislation, and regulations promoting protection and management of Western water resources. We will present our priorities and plan of action for 2015.

Break

8:15 – 8:45 am

Session V

Capital Ideas

Public. Private. Partnerships.

8:45 – 10:00 am

Colorado's Water Plan may need money to succeed. Texas and California recently passed popular bond initiatives to help support planned projects. Their experience proved that water and business communities can be strategic allies – especially when it comes to working together on ballot initiatives. Our economy rests on the foundation of secure water supplies. What ideas might we pursue to build strong partnerships with Colorado's business community? Funding for environmental goals in Colorado's Water Plan may be a substantial challenge. NGOs are building partnerships and financially supporting activities to integrate net environmental benefits in water projects. Where might additional funding come from to support environmental goals of Colorado's Water Plan?

Break and Open Mic with Session V Speakers

10:00 – 10:30 am

General Session VI

Who's Next?

Succession in Agriculture

10:30 – 11:45 am

One focus of Colorado's Water Plan is to avoid dry-up of agricultural lands, but other complex economic and sociological factors contribute to a future decline of agriculture. While 86% of water deliveries in Colorado are for agriculture, over 1 million acres have gone out of production in the last 15 years, and the number of farms in America has declined to the lowest level ever. Agriculture, always subject to the variables of markets and weather, face another obstacle: succession. The average age of agricultural operators has grown from 50 in 1982, to 58 in 2012. The highest percentage of agricultural operations with principal operators over 65 is cattle ranching. Meanwhile, the number of individuals in agriculture under the age of 25 continues to decline. Succession is critical to both the family operation, and the industry as a whole. As fewer youth enter agriculture, where will the successors come from, and how will they manage?

Break and Open Mic with Session VI Speakers

10:00 – 10:30 am

Friday Aspinall Luncheon

12:30 – 1:30 pm

Food service continues until 12:45

Program will be from 12:45 to 1:30

2015 Aspinall Water Leader of the Year Award Presentation

The Colorado Water Congress presents the prestigious Wayne N. Aspinall "Water Leader of the Year" Award annually to an individual Coloradan who has long demonstrated courage, dedication, knowledge and strong leadership in the development, protection and preservation of Colorado water. Honorees reflect those attributes clearly possessed by the award's namesake, Wayne N. Aspinall. The late Mr. Aspinall, a lawyer and former longtime member of the U. S. House of Representatives, was one of the most influential water leaders in Colorado history

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Attachment B

COLORADO WATER CONGRESS WEDNESDAY WORKSHOPS

Hyatt Regency Denver Tech Center

January 28, 2015

2015 COLORADO WATER CONGRESS ANNUAL CONVENTION
Rethinking Colorado's Water

WEDNESDAY WORKSHOPS
January 28, 2015

Wednesday Morning Program
8:30 – 11:30 am

Colorado Water Congress Committee Workshops

Committee workshops are not restricted to CWC Committee members. A purpose of these workshops is to introduce our membership to the work of the committees. (And hopefully convince you to join one or two!)

CWC State Affairs
8:30 to 9:30 am

Colorado Water Congress Lobbyist, Dianna Orf, and Water Policy Analyst, Emily Brumit, will provide an insider's guide to the 2015 legislative session. We will review introduced and anticipated legislation and activities of the various Water Congress subcommittees that are actively engaged in the legislative process. The workshop is a great opportunity to learn about the Water Congress State Affairs Committee, the legislative process, and how you can keep pace with rapidly changing legislation through our website.

CWC Federal Affairs
9:30 to 10:30 am

This workshop is the perfect complement to the program that will be presented at Friday's Annual Federal Affairs Breakfast. We will provide much more depth than is possible at that event. The Water Congress is continuing to develop an active federal presence through our involvement with the National Water Resources Association. For those convention attendees who are interested in learning more about the committee, this casual session is your opportunity.

CWC Water Quality
10:30 to 11:30 am

Colorado Water Quality Control Commissioner and CWC Water Quality Committee Chair, Mark Pifher, will provide an overview of water quality issues of relevance to Colorado's water community. This interactive session will be a great opportunity to learn about the 2015 priorities for the CWC Water Quality Committee.

Morning Workshops

9:30 to 11:30 am

Around the State with Colorado's Division Engineers

Part 1: East Slope

Dick Wolfe, Colorado State Engineer

Colorado Division Engineers

Our popular fast-paced session is back again this year. Come visit Colorado's seven river basins with our Division Engineers. We will spend 30 minutes per basin discussing river administration and water management topics of key importance. The morning session will focus on our eastern slope basins and the afternoon will highlight our four western slope basins. Regardless of the basin in which you live and work, this workshop is a unique opportunity to learn about current water matters throughout the State.

9:30 – 10:00 Water Administration Overview
10:00 – 10:30 South Platte (Division 1)
10:30 – 11:00 Arkansas (Division 2)
11:00 – 11:30 Rio Grande (Division 3)

Exploring Environmental Values in Colorado's Water

At our Summer Conference, attendees indicated that they would like to see the Water Congress pay greater attention to environmental professional interests. This is certainly a reflection of wide-spread public values and expectations for water management. Join us as we examine the emergence of these values and their important place at the table through specific projects throughout the state. How are protecting the environment in the context of Colorado's water system? Let's find out through case-studies and first hand experiences.

Data, Decision Support and Information Systems

The Colorado Water Conservation Board has invested several tens of millions to develop technology for rapid access to an extensive amount of information on river management. Detailed river basin tools and information are available on water rights, call records, diversion structures, wells, crop consumptive use requirements as well ground water and surface water models. CWCB staff will guide us through how to use these tools.

Passing the Torch

Sharing Expertise Across Generations

Within the next ten years we will celebrate the retirement of many of Colorado's water experts. Will their knowledge leave with them? This workshop will discuss effective strategies for passing the torch and examine the challenges we face as we strive to empower a new generation. We will use case studies of mentoring programs and trainings for emerging leaders. We hope to see representatives from every generation in the water community come together and provide input on this pervasive issue.

Colorado Water Congress President's Luncheon

Winter General Membership Meeting

12:00 – 1:15 pm

Food service continues until 12:30

Program will be from 12:30 to 1:15

The Colorado Water Congress (CWC) President and Vice President will review our recent accomplishments and discuss priorities for 2015. The luncheon will be one of the best opportunities for members to provide input on the future course of the CWC, to share their views on CWC member benefits and organizational priorities. Action will be taken on business items including 2015 CWC Policies and confirmation of Board members.

Wednesday Afternoon Workshops

1:30 – 3:30 pm (unless otherwise noted)

Around the State with Colorado's Division Engineers

Part 2: West Slope

Colorado Division Engineers

We continue with our review of water topics in Colorado's western slope river basins with our Division Engineers.

1:30 – 2:00 Gunnison (Division 4)
2:00 – 2:30 Colorado (Division 5)
2:30 – 3:00 Yampa/White/North Platte (Division 6)
3:00 – 3:30 San Juan (Division 7)

Water Law and Colorado's Water Plan

As concepts for the draft Colorado Water Plan were being developed, occasionally we heard, "Well that's a great idea, but we can't do that under Colorado water law." Will current water law aid or stall implementation of the plan? We are constantly making adjustments to our system of water law, proving the flexibility of Colorado's Prior Appropriation system. Do we need to begin work on statutory changes to ensure a strong, effective, and fair State water program?

2015 CWCB Instream Flow Workshop

Each year, the CWCB's Stream and Lake Protection Section hosts an annual workshop that provides state and federal agencies and other interested persons an opportunity to recommend certain stream reaches or natural lakes for inclusion in the State's Instream Flow (ISF) program. The entities that make ISF recommendations will present information regarding the location of new recommendations as well as preliminary data in support of the recommendation. There will be an opportunity for interested stakeholders to provide input and ask questions. This year's workshop will also include: an overview of the ISF Program and the new appropriation process, and an update of pending ISF recommendations from previous years.

Story Time with the Experts

As we will learn more about during our keynote talk at Thursday's lunch, the public is very interested in water. When Colorado's population searches for the facts, the water community will be their best source of information. We need to be prepared to share our stories and celebrate our successes. Join us as we learn how to make engaging stories about water in oral, visual, and written formats.

DARCA Workshop

The Next Step - Modeling Colorado's Water Plan

The final draft of Colorado's Water Plan was submitted to Governor Hickenlooper in December. The plan is a compilation of Colorado's abundant, complementary, and competing interests, all of which voice their concerns of how to best avoid the projected, mid-century gap.

Options on how best to achieve the goal of reducing the gap include: conservation, additional use of groundwater, recycling water, transfers of ag water to M&I, and additional transbasin/mountain diversions. All of the proposed strategies have their supporters and opponents. Through the use of analytical tools, can we determine the best, unbiased, and objective course of action for all Coloradans? The answer is, **yes.** This workshop will show how an open source and analytical model for the state water plan can aid policy makers in the identification and implementation of viable and efficient solutions to Colorado's water problems.

It is the hope that interested water experts, from across the state, can participate with DARCA this year in a transparent and collaborative modeling effort for determining how to best act upon 21st century water problems. A modeling process is essential for discovery that may challenge settled beliefs, opening doors to previously unidentified solutions.

CWC Member Forum

3:30 – 4:30 pm

As we look to the future, much of the work of the Water Congress will be handled through various working groups. Our POND Committee started just this way and we have since added a data working group. The Water Congress Board and staff are committed to ensuring that all of our members have opportunities to get involved in the organization. Do you have an idea for a working group to meet the needs of your organization? Attend this open forum and let's talk about them.

Annual POND Networking Event

4:30 – 6:30 pm

Especially for our newer members, one of the biggest challenges in networking is meeting others in the water field for the first time. Our POND events are designed to provide an opportunity for attendees to interact in a fun and engaging way. As always, the event is top secret up until it begins, but you can expect another unique and interactive event. We promise to challenge your knowledge of Colorado's water community and facilitate creativity and teamwork. The event is free to anyone in the water community. Drinks and appetizers will be provided.

2015 ANNUAL CONVENTION WORKSHOPS

Meeting Room						
TIME	Grand Mesa A/B/C	Grand Mesa D/E	Grand Mesa F	Chasm Creek	Highlands	Centennial
8:00 AM		Registration				
8:15 AM						
8:30 AM	CWC State Affairs					
8:45 AM						
9:00 AM		Exploring the Value of Water in Environmentalism	Around the State with Division Engineers	Passing the Torch	Data and Decision Support Systems	
9:15 AM						
9:30 AM	CWC Federal Affairs					
9:45 AM						
10:00 AM						
10:15 AM						
10:30 AM	CWC Water Quality					
10:45 AM						
11:00 AM						
11:15 AM						
11:30 AM	Break					
11:45 AM						
12:00 PM	Colorado Water Congress President's Luncheon Winter General Membership Meeting					
12:15 PM						
12:30 PM						
12:45 PM						
1:00 PM						
1:15 PM	Break					
1:30 PM	CWCB Instream Flow	Water Law and Colorado's Water Plan	Around the State with Division Engineers	Story Time with the Experts	DARCA Workshop	
1:45 PM						
2:00 PM						
2:15 PM						
2:30 PM						
2:45 PM						
3:00 PM						
3:15 PM						
3:30 PM	POND Event Setup			CWC Member Forum		
3:45 PM						
4:00 PM						
4:15 PM						
4:30 PM	POND Networking Event					
4:45 PM						
5:00 PM						
5:15 PM						
5:30 PM						
5:45 PM						
6:00 PM						

Attachment C

Northern Colorado Business Innovation Conference

January 29, 7 a.m. – 5 p.m.

Fort Collins Senior Center, 1200 Raintree Drive

Explore Economic, Environmental and Social Opportunities in Business

- continental breakfast
- interactive workshops
- keynote luncheon
  featuring Dr. Richard Jackson, author and host of PBS series *Designing Healthy Communities*
- exhibitor booths
- after-hours social
- use promo code NCBIC before Dec. 31 for $20 off registration

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Sponsorship opportunities available

For information and registration visit *fcgov.com/bic*.
Registration deadline is January 16.

City of Fort Collins Utilities · ClimateWise Business Smart. · Platte River Power Authority · Efficiency Works™ · Loveland Water and Power

City of Loveland

CITY OF LOVELAND
WATER & POWER DEPARTMENT
200 North Wilson • Loveland, Colorado 80537
(970) 962-3000 • FAX (970) 962-3400 • TDD (970) 962-2620

AGENDA ITEM: 7
MEETING DATE: 12/17/2014
SUBMITTED BY: Jim Lees, Utility Accounting Manager

TITLE: Financial Report Update

DESCRIPTION:
This item summarizes the monthly and year-to-date financials for November 2014.

SUMMARY:
The November 2014 financial reports are submitted for Commission review. The following table summarizes the sales and expense results for the month of November, and the November Year-To-Date results in comparison to the same periods from 2013. The summarized and detailed monthly financial statements that compare November Year-To-Date actuals to the 2014 budgeted figures are attached.

	November				November Year-To-Date			
	2014	2013	$ Ovr/(Und) vs. 2013	% Ovr/(Und) vs. 2013	2014	2013	$ Ovr/(Und) vs. 2013	% Ovr/(Und) vs. 2013
WATER								
Sales	$683,879	$536,097	$147,782	27.6%	$10,112,660	$8,826,878	$1,285,782	14.6%
Operating Expenses	$667,474	$606,438	$61,035	10.1%	$9,215,803	$7,096,096	$2,119,707	29.9%
Capital (Unrestricted)	$727,767	$131,124	$596,642	455.0%	$5,677,845	$2,522,802	$3,155,043	125.1%
WASTEWATER								
Sales	$637,670	$563,872	$73,798	13.1%	$7,488,456	$6,822,505	$665,951	9.8%
Operating Expenses	$418,758	$461,076	($42,318)	-9.2%	$5,038,087	$5,683,649	($645,562)	-11.4%
Capital (Unrestricted)	$6,656	$63,492	($56,836)	-89.5%	$1,705,781	$792,410	$913,371	115.3%
POWER								
Sales	$3,908,813	$3,681,399	$227,414	6.2%	$48,257,700	$47,595,949	$661,751	1.4%
Operating Expenses	$5,053,602	$3,609,101	$1,444,501	40.0%	$47,048,108	$44,926,036	$2,122,072	4.7%
Capital (Unrestricted)	$358,521	$591,500	($232,979)	-39.4%	$5,926,425	$6,929,270	($1,002,845)	-14.5%

RECOMMENDATION:
Staff report only. No action required.

REVIEWED BY DIRECTOR:
AP for SA

LIST OF ATTACHMENTS:
- City of Loveland Financial Statement-Raw Water
- City of Loveland Financial Statement-Water
- City of Loveland Financial Statement-Wastewater
- City of Loveland Financial Statement-Power

City of Loveland
Financial Statement-Raw Water
For Period Ending 11/30/2014

		TOTAL BUDGET FYE 12/31/2014	YTD ACTUAL	YTD BUDGET	OVER <UNDER>	VARIANCE
1	**REVENUES & SOURCES**					
2	Hi-Use Surcharge	43,000	61,900	39,380	22,520	57.2%
3	Raw Water Development Fees/Cap Rec Surcharge	349,000	495,819	319,910	175,909	55.0%
4	Cash-In-Lieu of Water Rights	45,000	46,200	41,250	4,950	12.0%
5	Native Raw Water Storage Fees	5,000	75,500	4,590	70,910	1544.9%
6	Raw Water 1% Transfer In	839,990	774,080	794,280	(20,200)	-2.5%
7	Interest on Investments	322,850	191,532	295,900	(104,368)	-35.3%
8	**TOTAL REVENUES & SOURCES**	**1,604,840**	**1,645,031**	**1,495,310**	**149,721**	**10.0%**
9	**OPERATING EXPENSES**					
10	Windy Gap Payments	833,730	833,669	833,730	(61)	0.0%
11	Transfer to Water	5,000,000	0	5,000,000	(5,000,000)	-100.0%
12	Transfer to Water SIF	8,000,000	0	8,000,000	(8,000,000)	-100.0%
13	**TOTAL OPERATING EXPENSES**	**13,833,730**	**833,669**	**13,833,730**	**(13,000,061)**	**-94.0%**
13	NET OPERATING REVENUE/(LOSS) (excl depr)	(12,228,890)	811,362	(12,338,420)	13,149,782	-106.6%
14	RAW WATER CAPITAL EXPENDITURES	3,006,860	190,451	2,417,110	(2,226,659)	-92.1%
15	**ENDING CASH BALANCES**					
16	Total Available Funds		14,863,632			
17	Reserve - Windy Gap Cash		3,383,267			
18	Reserve - 1% Transfer From Rates		3,751,567			
19	Reserve - Native Raw Water Storage Interest		1,570,401			
20	**TOTAL RAW WATER CASH**		**23,568,867**			
21	MINIMUM BALANCE (15% OF OPER EXP)		2,075,060			
22	OVER/(UNDER) MINIMUM BALANCE		21,493,807			

NOTE: YTD ACTUAL DOES NOT INCLUDE ENCUMBRANCES TOTALING: $ -

City of Loveland
Financial Statement-Water
For Period Ending 11/30/2014

			TOTAL BUDGET FYE 12/31/2014		YTD ACTUAL	YTD BUDGET	OVER <UNDER>	VARIANCE
1	****UNRESTRICTED FUNDS****							
2	**REVENUES & SOURCES**							
3	Water Sales		11,264,720		10,112,660	10,645,910	(533,250)	-5.0%
4	Raw Water Transfer Out		(839,990)		(774,080)	(794,280)	20,200	-2.5%
5	Wholesale Sales		71,380		109,699	69,930	39,769	56.9%
6	Meter Sales		38,740		76,857	34,170	42,687	124.9%
7	Interest on Investments		114,730		44,038	105,130	(61,092)	-58.1%
8	Other Revenue		6,090,380		3,657,852	6,025,430	(2,367,578)	-39.3%
9	External Loan Monies Received		12,900,000		0	12,900,000	(12,900,000)	-100.0%
10	**TOTAL REVENUES & SOURCES**		**29,639,960**		**13,227,027**	**28,986,290**	**(15,759,263)**	**-54.4%**
11	**OPERATING EXPENSES**							
12	Source of Supply		2,494,650		1,752,363	1,957,370	(205,007)	-10.5%
13	Treatment		2,742,700		2,249,762	2,372,610	(122,848)	-5.2%
14	Distribution Operation & Maintenance		3,132,600		2,304,202	2,531,610	(227,408)	-9.0%
15	Administration		506,750		303,612	447,780	(144,168)	-32.2%
16	Customer Relations		238,900		194,045	222,170	(28,125)	-12.7%
17	PILT		729,730		653,701	699,100	(45,399)	-6.5%
18	1% for Arts Transfer		55,420		26,901	41,550	(14,649)	-35.3%
19	Services Rendered-Other Departments		1,034,610		894,744	899,290	(4,546)	-0.5%
20	Internal Loan Debt Expense		810,000		832,800	810,000	22,800	2.8%
21	External Loan Debt Expense		651,200		3,674	651,200	(647,526)	-99.4%
22	**TOTAL OPERATING EXPENSES**		**12,396,560**		**9,215,803**	**10,632,680**	**(1,416,877)**	**-13.3%**
23	NET OPERATING REVENUE/(LOSS)(excl depr)		17,243,400		4,011,224	18,353,610	(14,342,386)	-78.1%
24	CAPITAL EXPENDITURES		20,373,470		5,677,845	18,934,530	(13,256,685)	-70.0%
25	**ENDING CASH BALANCE**				**5,476,314**			
26	**WATER DEBT FUND ENDING CASH BALANCE PLUS MONIES RECEIVED FROM LENDERS**				**24,237**			
27	MINIMUM BALANCE (15% OF OPER EXP)				1,859,484			
28	OVER/(UNDER) MINIMUM BALANCE				3,616,830			
29	****RESTRICTED FUNDS****							
30	**REVENUES & SOURCES**							
31	SIF Collections		9,652,540		3,624,551	9,381,200	(5,756,649)	-61.4%
32	SIF Interest Income		77,300		69,870	70,610	(740)	-1.0%
33	**TOTAL SIF REVENUES & SOURCES**		**9,729,840**		**3,694,421**	**9,451,810**	**(5,757,389)**	**-60.9%**
34	SIF Capital Expenditures		17,545,460		3,636,306	16,927,410	(13,291,104)	-78.5%
35	1% for Arts Transfer		52,500		13,404	39,390	(25,986)	-66.0%
36	**SIF ENDING CASH BALANCE**				**8,729,270**			
37	**TOTAL ENDING CASH BALANCE**				**14,205,584**			

NOTE: YTD ACTUAL DOES NOT INCLUDE ENCUMBRANCES TOTALING: $ 26,530,564

City of Loveland
Financial Statement-Wastewater
For Period Ending 11/30/2014

		TOTAL BUDGET FYE 12/31/2014	YTD ACTUAL	YTD BUDGET	OVER <UNDER>	VARIANCE
1	****UNRESTRICTED FUNDS****					
2	**REVENUES & SOURCES**					
3	Sanitary Sewer Charges	8,269,970	7,488,456	7,579,940	(91,484)	-1.2%
4	High Strength Surcharge	546,760	334,897	510,900	(176,003)	-34.4%
5	Interest on Investments	35,340	68,436	32,430	36,006	111.0%
6	Other Revenue	38,680	247,549	39,540	208,009	526.1%
7	**TOTAL REVENUES & SOURCES**	**8,890,750**	**8,139,338**	**8,162,810**	**(23,473)**	**-0.3%**
8	**OPERATING EXPENSES**					
9	Treatment	3,269,370	2,463,083	2,747,230	(284,147)	-10.3%
10	Collection System Maintenance	1,911,050	1,393,306	1,397,620	(4,314)	-0.3%
11	Administration	394,510	184,344	339,970	(155,626)	-45.8%
12	Customer Relations	35,240	43,624	30,790	12,834	41.7%
13	PILT	617,170	547,012	566,560	(19,548)	-3.5%
14	1% for Arts Transfer	21,610	4,877	16,230	(11,353)	-70.0%
15	Services Rendered-Other Departments	472,190	401,841	398,840	3,001	0.8%
16	**TOTAL OPERATING EXPENSES**	**6,721,140**	**5,038,087**	**5,497,240**	**(459,153)**	**-8.4%**
17	NET OPERATING REVENUE/(LOSS)(excl depr)	2,169,610	3,101,251	2,665,570	435,681	16.3%
18	CAPITAL EXPENDITURES	7,844,150	1,705,781	6,334,040	(4,628,259)	-73.1%
19	**ENDING CASH BALANCE**		**8,646,567**			
20	MINIMUM BALANCE (15% OF OPER EXP)		1,008,171			
21	OVER/(UNDER) MINIMUM BALANCE		7,638,396			
22	****RESTRICTED FUNDS****					
23	**REVENUES & SOURCES**					
24	SIF Collections	1,113,850	1,480,702	1,028,510	452,192	44.0%
25	SIF Interest Income	39,760	48,773	36,410	12,363	34.0%
26	**TOTAL SIF REVENUES & SOURCES**	**1,153,610**	**1,529,475**	**1,064,920**	**464,555**	**43.6%**
27	SIF Capital Expenditures	1,325,030	575,636	1,015,810	(440,174)	-43.3%
28	1% for Arts Transfer	8,130	4,239	6,090	(1,851)	-30.4%
29	**SIF ENDING CASH BALANCE**		**6,466,125**			
30	**TOTAL ENDING CASH BALANCE**		15,112,692			

NOTE: YTD ACTUAL DOES NOT INCLUDE ENCUMBRANCES TOTALING: $ 758,373

City of Loveland
Financial Statement-Power
For Period Ending 11/30/2014

		*	TOTAL BUDGET	*	YTD ACTUAL	YTD BUDGET	OVER <UNDER>	VARIANCE
	****UNRESTRICTED FUNDS****	*		*				
		*		*				
1	REVENUES & SOURCES:	*		*				
2	Electric revenues	*	$53,808,970	*	$48,257,700	$49,437,790	($1,180,090)	-2.4%
3	Wheeling charges	*	$240,000	*	$258,449	$220,000	$38,449	17.5%
4	Interest on investments	*	$154,120	*	$144,652	$141,277	$3,375	2.4%
5	Aid-to-construction deposits	*	$750,000	*	$1,954,475	$687,500	$1,266,975	184.3%
6	Customer deposit-services	*	$160,000	*	$216,677	$146,667	$70,011	47.7%
7	Doorhanger fees	*	$420,000	*	$376,884	$385,000	($8,116)	-2.1%
8	Connect Fees	*	$160,000	*	$149,904	$146,667	$3,237	2.2%
9	Services rendered to other depts.	*	$0	*	$1,343	$0	$1,343	0.0%
10	Other revenues	*	$402,950	*	$574,662	$369,371	$205,291	55.6%
11	Year-end cash adjustments	*	$0	*	$0	$0	$0	0.0%
12	**TOTAL NORMAL REVENUES & SOURCES**	*	**$56,096,040**	*	**$51,934,746**	**$51,534,271**	**$400,475**	**0.8%**
		*		*				
13	FLOOD REVENUE (UNBUDGETED)	*	$0	*	$2,816,745	$0	$2,816,745	0.0%
14	**TOTAL REVENUES & SOURCES**	*	**$56,096,040**	*	**54,751,491**	**$51,534,271**	**$3,217,220**	**6.2%**
		*		*				
15	OPERATING EXPENSES:	*		*				
16	Hydro oper. & maint.	*	$232,900	*	$541,965	$214,985	$326,981	152.1%
17	Purchased power	*	$40,266,940	*	$36,230,753	$36,891,091	($660,338)	-1.8%
18	Distribution oper. & maint.	*	$9,520,119	*	$3,944,718	$8,787,802	($4,843,084)	-55.1%
19	Customer Relations	*	$1,074,030	*	$609,992	$991,412	($381,420)	-38.5%
20	Administration	*	$796,130	*	$444,751	$734,889	($290,139)	-39.5%
21	Payment in-lieu-of taxes	*	$3,772,860	*	$3,340,190	$3,452,167	($111,977)	-3.2%
22	1% for Arts Transfer	*	$78,940	*	$20,322	$72,230	($51,909)	-71.9%
23	Services rendered-other depts.	*	$2,154,280	*	$1,915,417	$1,974,757	($59,340)	-3.0%
24	**TOTAL OPERATING EXPENSES (excl depn)**	*	**$57,896,199**	*	**$47,048,108**	**$53,119,333**	**($6,071,225)**	**-11.4%**
		*		*				
25	NET OPERATING REVENUE/(LOSS) (excl depn)	*	($1,800,159)	*	$7,703,383	($1,585,062)	$9,288,445	-586.0%
		*		*				
26	CAPITAL EXPENDITURES:	*		*				
27	General Plant/Other Generation & Distribution	*	$9,689,011	*	$3,791,930	$8,938,230	($5,146,299)	-57.6%
28	Aid-to-construction	*	$750,000	*	$1,902,195	$692,308	$1,209,887	174.8%
29	Service installations	*	$190,000	*	$232,300	$175,385	$56,915	32.5%
30	**TOTAL CAPITAL EXPENDITURES**	*	**$10,629,011**	*	**$5,926,425**	**$9,805,922**	**($3,879,497)**	**-39.6%**
		*		*				
31	**ENDING CASH BALANCE**	*		*	**$19,078,994**			
		*		*				
32	MINIMUM BAL. (15% of OPER EXP excl depn)	*		*	$8,684,430			
33	OVER/(UNDER) MINIMUM BALANCE	*		*	$10,394,565			
		*		*				
34	****RESTRICTED FUNDS****	*		*				
		*		*				
35	PIF Collections	*	$2,464,870	*	$2,329,602	$2,191,964	$137,637	6.3%
36	PIF Interest Income	*	$22,920	*	$33,552	$21,010	$12,542	59.7%
37	Water Loan Payback	*	$810,000	*	$832,800	$810,000	$22,800	2.8%
38	**TOTAL REVENUES**	*	**$3,297,790**	*	**$3,195,954**	**$3,022,974**	**$172,979**	**5.7%**
		*		*				
39	PIF Feeders	*	$1,075,000	*	$217,205	$992,308	($775,103)	-78.1%
40	PIF Substations	*	$2,547,970	*	$1,542,506	$2,335,639	($793,133)	-34.0%
41	**TOTAL EXPENDITURES**	*	**$3,622,970**	*	**$1,759,711**	**$3,327,947**	**($1,568,235)**	**-47.1%**
		*		*				
42	**ENDING PIF CASH BALANCE**	*		*	**$3,897,455**			
		*		*				
43	**TOTAL ENDING CASH BALANCE**	*		*	**$22,976,450**			

NOTE: YTD ACTUAL does NOT include encumbrances totalling $1,207,592