nebraska energy conservation plan

SMALL HYDROELECTRIC POTENTIAL IN NEBRASKA:

AN INVENTORY OF EXISTING DAM SITES IN THE STATE

Progress Report Number One
December, 1980

Prepared by the Nebraska Energy Office under a grant from the U.S. Department of Energy, Region VII, as authorized under Title IV, Public Utilities Regulatory Policy Act of 1978, P.L. 95-617.

INVENTORY OF EXISTING HYDROELECTRIC DAM SITES IN NEBRASKA

Introduction

The U.S. Department of Energy, Region VII, Kansas City, Missouri, has provided a small federal grant to the Nebraska Energy Office for the purpose of reporting the status of hydroelectric generation in the State, and to prepare an inventory of existing dam sites that have the potential of generating up to 30 megawatts of power.

This progress report under the grant is the first of three documents to be prepared. It surveys the history of hydroelectric generation in the State, reviews analytic work prepared by the U.S. Corps of Engineers (under the National Hydroelectric Development Feasibility Study), reports on a previous hydro feasibility study for the Big Blue River, and offers an initial draft inventory of existing hydro sites discovered to date.

A second progress report will identify further potential sites to be discovered from a survey of additional State and federal agencies, and will expand the data of the draft inventory. The final report will complete the information assembly for the inventory of dam sites in the State and will identify some current issues related to small-scale hydroelectric development in Nebraska.

Status of Hydroelectric Generation in Nebraska

In 1970, there were 20 operative hydroelectric plants in Nebraska, excluding the federal installation at Gavins Point Dam on the Missouri River which is intertied with the Missouri River Basin Project power and transmission system. The individual capacity of ten of these plants was less than one megawatt each. Their combined output totalled only 3.3 megawatts. Four other plants had capacities from one to five megawatts totalling 10.1 megawatts of capacity. The other six plants had capacities from 8.25 to 40 megawatts, producing a combined total of about 128 megawatts.

These 20 plants had individual rights to divert streamflow ranging from 35 to 3,500 cubic feet per second (cfs). Total rights for diversion amount to 16,070 cfs, including 68 cfs for the two small plants that are inoperative. The locations of these existing hydroelectric plants and some of their characteristics are shown in the draft inventory contained at the end of this report.

The Framework Study

The Study, prepared by the Nebraska Soil and Water Conservation Commission in May, 1971, after reporting on the 22 existing plant sites described above, drew the following conclusions:

"Hydroelectric power generation in the State is being replaced by other methods. In recent years the cost of generating electricity at hydroelectric plants has also increased, resulting in the phasing out of a number of small plants.

No new hydroelectric plants have been built in the State since 1941 because of the lack of feasible sites and increased costs. Dams and power plants more recently have been built on the Missouri River where high flows were available and where power was only one purpose of the overall project.

The importance of hydroelectric generation within Nebraska is likely to continue to decline. The Nebraska Power Industry Committee (NPIC), composed of representatives of many of the State's subdivisions which supply power recently established a committee to study the industry and investigate generation and transmission facilities which might be needed in the future. The construction of new hydroelectric plants was not assigned any consideration in those studies, and of the existing hydroelectric facilities, none were mentioned beyond the 1980's in future plans.

The six largest hydroelectric power plants in the State are licensed by the Federal Power Commission and have a total generating capacity of only 128 megawatts. No plans were proposed for their expansion. The NPIC has estimated that the statewide demand for power will reach 8,950 megawatts by 1990, when these six plants will be about 50 years old and the Federal Power Commission licenses will expire. Their output will be only 1.4 percent of the estimated 1990 demand, declining to 0.8 percent of the demand by the end of the century. Repairs and replacement will probably be uneconomical and the plants will likely be phased out."

The Framework Study, also known as State Water Plan, Publication Number 101, viewed both water problems for hydro plants and the economic future for further hydro development gloomily. Its analysis condludes:

> "Power is an industry, and as an industry it has third preference in the use of water supplies.....domestic and agricultural uses having higher preference. This has caused a conflict in the recent past when applications for the storage and use upstream of water presently being used for downstream hydroelectric power generation have been made for a higher preference use. Water reserved for hydropower generation downstream cannot be taken and used consumptively for irrigation and other agricultural and domestic purposes upstream unless the hydropower producers are reimbursed for damage suffered through loss of power production. As the development of water resources continues, problems concerning present power rights will likely increase.
>
> The demand for electrical energy is not constant. .....peak demands are satisfied most easily with energy generated by hydroelectric power plants that can rapidly vary their energy output. However, existing plants in Nebraska are unable to meet present peaks and virtually no additional suitable sites remain in the State for economical hydroelectric power production under current economic criteria."

All of this evaluation was made, of course, before the petroleum embargo of 1973 created serious energy supply concerns and rapidly escalating liquid fuel prices made existing hydro sites much more attractive as energy sources.

National Hydropower Study

The National Hydropower Study, created by the Water Resources Development Act of 1976, sought:

> "...to study the most efficient methods of utilizing the hydroelectric power resources at water resource development projects under the jurisdiction of the Secretary of the Army, and to prepare a plan based upon the findings of such study."

The objectives have been to:

1. Define the needs for hydroelectric power.
2. Assess the potential for increasing hydropower.
3. Determine the feasibility of increasing capacities through new sites, added generation facilities, and uprating existing systems.
4. Analyze current institutional and policy setting
5. Assess environmental and socio-economic impacts.
6. Recommend to Congress a national hydroelectric power development program.

Under the Study, hydroelectric generation was seen as a substantial contribution to solving the nation's energy shortage by fully utilizing the power potential of streams and rivers. The production of electricity from flowing water dates back to 1882 when the first hydroelectric plant was build on the Fox River at Appleton, Wisconsin. Since then, the inventory of hydroelectric facilities owned and operated by electric utilities, federal and state agencies and other producers has grown to 1,145 plants with a yearly output of 221 billion kilowatt hours and a capacity of 68,294 megawatts.

The Study was assigned to the U.S. Army Corps of Engineers, a hydropower builder and producer for 70 years, which now furnishes about 26% of the nation's hydroelectric capacity. The Institute for Water Resources, Fort Belvoir, Virginia, is managing the study, scheduled for completion by the fall of 1981.

The Study has been divided into two major elements.

a. A comprehensive inventory of hydropower resources across the nation, plus projected regional demands for hydropower through the year 2000.

b. The identification of socio-economic, environmental, institutional and other policy issues affecting hydropower developments.

The draft document prepared by the Corps in September, 1980, narrowed the field of study from 115 Nebraska sites originally identified as having hydro potential, to three recommended for serious consideration. The original 115 sites are included in the draft inventory at the end of this report. The 3 sites showing sufficient potential to merit feasibility work are:

1. Merritt Dam in Cherry County, southwest of Valentine on the Snake River. (This was the only existing dam and reservoir facility recommended for hydro development.) It has no present hydro facility.

2. The Calamus River in Garfield County, near Burwell on the upstream (west) side.

3. The proposed Norden Dam on the Niobrara River, presently being challenged in legal proceedings as to its irrigation potential and for the purpose of designating the stream as a "wild and scenic river". Both of the latter sites are under study by the Water Power Resources Service.

Because the draft document recently released by the Corps focuses on such a small number of Nebraska sites, the document has not been reproduced here nor made the subject of further examination. The computer analysis performed for the original 115 sites, paying special attention to sites having the potential of over 50 MW, has also not been evaluated. Rather, all 115 sites have been included in the draft inventory so that their small-scale hydro potential could be studied under criteria far different in scale and scope than those used in the Corps study.

Big Blue River Hydroelectric Study

The Big Blue River Co-Dependent Hydroelectric Development Study was jointly funded by the U. S. Department of Energy and the Nebraska Municipal Power Pool in early 1979. The proposed development comprised a series of seven existing dams on a 65-mile stretch of the Big Blue River in southern Nebraska, running roughly southeast from Crete to the Kansas state line south of Barneston. All seven site owners cooperated in the study although all of them subsequently declined to seek further federal funds for design or development. The objective of the study was to establish technical and economic feasibility for developing hydroelectric power potential at the seven sites.

The project was found to be a technically feasible concept. The proposed redevelopment would have included seven installations with a recommended nominally rated capacity of 3,920 KW. The average annual gross generation expected from the seven sites was expected to be 11,555,000 KWh. It was estimated that the cost of redevelopment (at 1979 price levels) was slightly over $14 million. Both the Feasibility Report and the second volume of Appendices have been reproduced and included with this report. An update of project activity will be presented in a subsequent report.

Interim Observations

More than 100 existing hydro, recreation, irrigation, or flood control sites have been identified in the State. Because of their prior claim to precious water rights, because existing facilities have fewer capital and environmental hurdles to overcome, and because energy alternatives are being sought on every hand, the sites need to be scrutinized very closely. the reporting of available information under the grant to the Nebraska Energy Office is a valuable first step in that necessary process. The final report under the grant is expected to be released to the Governor and the Unicameral during the first quarter of 1981.

DRAFT INVENTORY OF EXISTING HYDROELECTRIC DAMSITES IN NEBRASKA

DECEMBER, 1980

Information reported as available:

1. Site Identification (Agency), Project Name
2. Stream
3. Owner
4. County/Nearest Downstream Town
5. Location
6. Purpose/Status
7. Net Power Head (ft)
8. Inflow (cubic feet per second)
9. Average Annual Flow (acre feet/year)
10. Existing Capacity (kw)/Average Annual Energy (mwh)
11. Incremental Capacity/Energy
12. Condition Power House and Facilities
13. Present use of Dam
14. Type and Condition of Dam
15. Access Road Condition
16. Environmental and Institutional Barriers
17. Energy Demand in Area

Inventory of existing Hydroelectric Damsites in Nebraska

Site Identification (Agency) Project Name	Stream	Owner	County/ Nearest Downstream Town	Location[1]	Purpose/ Status	Net Power Head (ft)	Inflow[2] (cubic feet per second)	Avg. Annual Flow (acre feet/year)	Existing[2] Capacity (kw)/ Average (mwh) Annual Energy	Incremental Capacity Energy	Condition Power House & Facilities	Present use of Dam	Type & Condition of Dam	Access Road Condition
Valentine #1	Minnecha-duza	City of Valentine	Cherry		Inactive		40.0	24,560	---					
Valentine #2	Minnecha-duza	NPPD	Cherry		Inactive		35.0		250					
Valentine #3	Niobrara	NPPD	Cherry		Inactive		2,150.0	563,700	1,850					
Spencer	Niobrara	NPPD					1,450.0	1,013,000	3,900					
NEIMR00 237 (USCE) Maloney North Platte	North & South Platte R.	NPPD	Lincoln North Platte	41° 3.3' 100° 46.9'	Hydroelectric Operational	31.0	2,550.0		26,000					
NEIMR00 238 (USCE) Gothenburg	Platte R.	NPPD	Lincoln Gothenburg	40° 59.2' 100° 20.5'	Inactive	(637.8)	188.0		500					
NEIMR00 202 (USCE) Kearney Diversion	Platte R.	NPPD	Buffalo Kearney	40° 41.2' 99° 20.9'	Irrigation Inactive	(1,492.0)	625.0		1,880					
NEHMR00 235 (USCE) Jeffrey Reservoir	North & South Platte R.	CNPP & ID	Lincoln Brady	40° 57.6' 100° 24.3'	Irrigation & Hydroelectric Res./Div. Operational	108.0	2,220.0		18,000					
NEIMR00 225 (USCE) Johnson #1	North & South Platte R.	CNPP & ID	Gosper Lexington	40° 40.4' 99° 50.4'	Irrigation, Hydro. & Flood Operational	(1,450)	2,200.0		(36,000) 18,000 144,000					
Johnson #2	North & South Platte R.	CNPP & ID			Operational		2,200.0		18,000					
Ericson	Cedar River	NPPD			Inactive		175.0		440					
Spalding	Cedar River	City of Spalding			Inactive		290.0	111,600	150					
Bollus	Middle Loup R.	NPPD			Inactive		1,000.0		2,500					
NEIMR00 801 (USCE) Monroe	Loup R.	LPPD	Polk Columbus	41° 30.0' 97° 35.9'	Hydroelectric Res./Div. Operational		3,500.0		8,250	0				
NEHMR00 243 (USCE) Columbus - Lake Babcock	(canal) Loup R.	LPPD	Platte Columbus	41° 28.0' 97° 22.0'	Hydroelectric Res./Div. Operational		3,500.0		39,900 19,540					
Norfolk	North Fork Elkhorn R.	Norfolk Feed Mills			Inactive		100.0	297,000	80					
NEGMRK0 116 (USCE) Imperial	Frenchman Creek	City of Imperial	Chase	40° 26.0' 101° 37.9'	Hydroelectric Res./Div. Retired P.P.	(68)	55.0	47,600	140					
Champion Mills	Frenchman Creek	Carl Hill			Retired		28.3		---					
NEMMRK0 121 (USCE) Holmesville	Big Blue R.	Robert L Cunning	Gage Holmesville	40° 12.0' 96° 37.9'	Hydroelectric Res./Div. Retired P.P.	12.1 (692)	(325.0) 500.0	(280)	350 900	4,377 6,542	House abandoned, no equipment	Recreational & Boat Club	Concrete Gravity - Good	New Bridge upstream

1. Latitude and longitude, or section, township and range.

2. When column has second figure in parenthesis, it represents information from a second source that doesn't agree with the first source.

Inventory of existing Hydroelectric Damsites in Nebraska

Site Identification (Agency) Project Name	Stream	Owner	County/ Nearest Downstream Town	Location[1]	Purpose/ Status	Net Power Head (ft)	Inflow[2] (cubic feet per second)	Avg. Annual Flow (acre feet/year)	Existing[2] Capacity (kw)/ Average (mwh) Annual Energy	Incremental Capacity Energy	Condition Power House & Facilities	Present use of Dam	Type & Condition of Dam	Access Road Condition
NEGMRKO 120 (USCE) Blue Springs	Big Blue R.	NPPD	Gage Barneston	40° 8.0′ 96° 39.0′	Hydroelectric Res./Div. Retired P.P		(725) 450.0		420 1,200	18 722	House - fair Equipment - operable but poor	Recreational	Concrete faced wood - Poor	Private Drive
NEGMRKO 133 (USCE) DeWitt	Big Blue R.	Zwonechek Estate	Saline Beatrice	40° 23.0′ 96° 56.0′	Hydroelectric Res./Div. Retired P.P.	10	(368) 200.0	398,000 (375)	240 800	178 1,159	Powerhouse - Good Equipment repairable	National Register of Historical Places	Concrete faced wood piles - Breached	Private Drive
NEYMRKO 133 (USCE) Barneston	Big Blue R.	Norris PPD	Gage Barneston	40° 3.1′ 96° 35.2′	Hydroelectric Recreational Res./Div. Retired P.P.		(762) 500.0	569,500 (750)	720 1,200	158 2,076	House - Good Equipment - Poor	Recreational	Concrete Gravity - Good	Private Drive
NECMROO 209 (USCE) Merritt Reservoir	Snake River	DOI USBR	Cherry Valentine	42° 38.0′ 100° 52.3′	Irrigation Recreation Non-existent	110.0	244.0	108,700	0 0	2,040 12,381				
NEIMROO 208 (USCE) Pierce Mill	Minnecha-duza R.	NPPD	Cherry Valentine	42° 53.0′ 100° 33.1′	Hydroelectric Non-existent		33.8	24,560	0 0	0 0				
NE6MROO 205 (USCE) Reservoir	Niobrara R.		Cherry	42° 51.9′ 100° 14.5′	Hydro & Irrigation	75.0	656.8		0 0	8,980 34,755				
NE6MROO 206 (USCE) Sparks	Niobrara R.		Cherry	42° 54.4′ 100° 22.9′	Hydro & Irrigation	60.0	838.0	563,700	0 0	7,829 30,558				
NE6MROO 207 (USCE) Thacher	Niobrara R.		Cherry	42° 51.5′ 100° 30.0′	Hydro & Irrigation	106.0	588.2		0 0	8,594 33,155				
NE6MROO 226 (USCE) Phoenix 2	Niobrara R.		Holt	42° 54.0′ 98° 58.9′	Hydro & Irrigation	100.0	1,177.1		0 0	15,516 62,419				
NE6MROO 227 (USCE) Otter Creek	Niobrara R.		Holt	42° 49.5′ 99° 12.5′	Hydro & Irrigation	145.0	923.1		0 0	18,314 73,530				
NE6MROO 252 (USCE) Redbird	Niobrara R.		Boyd	42° 46.5′ 98° 22.5′	Hydro & Irrigation	100.0	1,392.1		0 0	17,061 74,109				
NECMROO 240 (USCE) Norden	Niobrara R.	Water Power Resource Service	Brown Butte	42° 28.2′ 100° 0.0′	Irrigation Recreation	175.0	934.0	625,200	0 0	21,992 70,116				
NEGMROO 228 (USCE) Northern N.	Niobrara R.	NPPD	Holt Niobrara	42° 48.5′ 98° 39.4′	Hydroelectric	18.0	1,395.3		2,640 7,343	0 0				
NECMROO 211 (USCE) Box Butte	Niobrara R.	DOI USBR	Dawes Dunlap	42° 27.4′ 103° 3.9′	Irrigation	56.0	26.7	19,260	0 0	0 0				
NECMROO 675 (USCE) Antelope C.	Tri-Antelope	City of Gordon	Sheridan Gordon	42° 48.5′ 102° 16.0′	Flood Control	25.0	8.9		0 0	0 0				
NECMROO 676 (USCE) Antelope C.	Antelope Creek	City of Gordon	Sheridan Gordon	42° 48.9′ 102° 12.7′	Flood Control	27.0	4.0		0 0	0 0				
NECMROO 677 (USCE) Whitney Reservoir	White R.	Whitney Irrigation Dist.	Dawes Whitney	42° 46.7′ 103° 18.6′	Irrigation	12.0	15.0	14,630	0 0	0 0				
NE6MROO 253 (USCE) Long Pine	Long Pine R.		Keya Paha	42° 43.4′ 99° 37.9′	Hydro & Irrigation	150.0	142.6	99,260	0 0	1,285 9,054				
NE6MROO 201 (USCE) Saint Claire	Elkhorn R.	DOI USBR	Antelope	42° 2.3′ 97° 56.2′	Hydro & Irrigation	105.0	877.0	167,000	0 0	13,252 39,097				

1. Latitude and longitude, or section, township and range.

2. When column has second figure in parenthesis, it represents information from a second source that doesn't agree with the first source.

Inventory of existing Hydroelectric Damsites in Nebraska

Site Identification (Agency) Project Name	Stream	Owner	County/ Nearest Downstream Town	Location[1]	Purpose/ Status	Net Power Head (ft)	Inflow[2] (cubic feet per second)	Avg. Annual Flow (acre feet/year)	Existing[2] Capacity (kw)/ Average (mwh) Annual Energy	Incremental Capacity Energy	Condition Power House & Facilities	Present use of Dam	Type & Condition of Dam	Access Road Condition
NE6MR00 250 (USCE) Pender Dam	Logan Creek	DOI USBR	Thurston	42° 7.8' 96° 43.6'	Hydro & Irrigation	52.0	123.9	91,290	0 0	100 797				
NE6MR00 210 (USCE) Monterrey	Pebble Creek		Cuming	41° 46.7' 96° 49.3'		90.0	20.0	25,940	0 0	0 0				
NECMR00 247 (USCE) Calamus	Calamus R.	Water Power Resource Service	Garfield Burwell	41° 49.9' 99° 12.4'	Irrigation Recreation	80.0	300.0	217,400	0 0	1,652 11,114				
NECMR00 223 (USCE) Burwell - Sumter	North Loup R.	North Loup	Garfield Burwell	41° 47.5' 99° 7.8'	Irrigation	0	705.7		0 0	0 0				
NECMR00 239 (USCE) Taylor - Ord	North Loup R.	North Loup	Loup Taylor	41° 47.7' 99° 27.6'	Irrigation	0	446.9	331,800	0 0	0 0				
NECMR00 241 (USCE) Fullerton	Cedar R.	City of Fullerton	Nance Fullerton	41° 22.5' 97° 57.9'	Hydroelectric	0	239.7	173,900	0 0	0 0				
NECMR00 218 (USCE) Papillion	Papillion		Douglas Omaha	41° 18.9' 96° 7.2'	Flood Control Recreation	58.0	30.5		0 0	0 0				
NECMR00 219 (USCE) Irvington	Papillion		Douglas Omaha	41° 20.3' 96° 3.2'	Flood Control Recreation	46.0	7.3		0 0	0 0				
NECMR00 671 (USCE) Lonergan R.	Tri-Knight	Lonergan	Douglas Omaha	41° 22.3' 96° 2.3'	Recreation	75.0	1.0		0 0	0 0				
NEGMR00 220 (USCE) Site 3A	Papillion		Douglas	41° 22.8' 96° 9.9'	---	67.0	29.4		0 0	0 0				
NEGMR00 221 (USCE) Papio Site	Papillion		Douglas	41° 16.7' 96° 9.9'	---	59.0	4.2		0 0	0 0				
NEGMR00 222 (USCE) Papio Site	Papillion		Douglas	41° 13.2' 96° 9.0'		75.0	4.5		0	0				
NECMR00 204 (USCE) Beaver Lake	Rock Creek	Beaver Lake	Cass Rock Bluff	40° 55.4' 95° 52.1'	Recreation Water Supply	90.0	4.4		0	0				
NEGMRK0 128 (USCE) Palmyra Res.	Hooper Creek		Otoe	40° 42.8' 96° 19.3'	---	0	24.0		0 0	0 0				
NEGMRK0 127 (USCE) Auburn Reservoir	Muddy Creek		Nemaha	40° 19.9' 95° 56.0'	---	0	24.0		0 0	0 0				
NEGMRK0 129 (USCE) Humboldt Reservoir	Long Branch		Richardson	40° 10.8' 95° 58.3'	---	0	20.0		0 0	0 0				
NEGMRK0 130 (USCE) Stella Reservoir	Little Muddy		Richardson	40° 12.4' 95° 47.6'	---	0	18.0		0 0	0 0				
NEGMRK0 126 (USCE) Tecumseh Reservoir	Yankee Creek		Johnson	40° 21.9' 96° 18.1'	---	0	25.0		0 0	0 0				
NECMRK0 122 (USCE) Big Indian	Tri-Big Indian	Lower Big	Gage Wymore	40° 5.5' 96° 43.0'	Flood Control	0	71.0		0 0	0 0				
NECMR00 230 (USCE) Wagon Train	Hickman Branch		Lancaster Hickman	40° 37.1' 96° 35.0'	Flood Control Recreation	42.0	9.6		0 0	0 0				
NECMR00 231 (USCE) Pawnee Dam	North Branch		Lancaster Emerald	40° 50.3' 96° 51.8'	Flood Control Recreation	60.0	11.4		0 0	0 0				

1. Latitude and longitude, or section, township and range.

2. When column has second figure in parenthesis, it represents information from a second source that doesn't agree with the first source.

Inventory of existing Hydroelectric Damsites in Nebraska

Site Identification (Agency) Project Name	Stream	Owner	County/ Nearest Downstream Town	Location[1]	Purpose/ Status	Net Power Head (ft)	Inflow[2] (cubic feet per second)	Avg. Annual Flow (acre feet/year)	Existing[2] Capacity (kw)/ Average (mwh) Annual Energy	Incremental Capacity Energy	Condition Power House & Facilities	Present use of Dam	Type & Condition of Dam	Access Road Condition
NECMR00 232 (USCE) Stagecoach	Hickman Branch		Lancaster Hickman	40° 36.3' 96° 38.2'	Flood Control Recreation	39.0	5.2		0 0	0 0				
NECMR00 233 (USCE) Branched Oak	Salt Creek		Lancaster Raymond	40° 58.2' 96° 51.2'	Flood Control Recreation	77.0	19.3		0 0	0 0				
NECMR00 234 (USCE) Bluestem Lake	Olive Branch		Lancaster Sprague	40° 37.6' 96° 47.3'	Flood Control Recreation	49.0	6.2		0 0	0 0				
NECMR00 701 (USCE) Conestoga	Holmes Creek		Lancaster Lincoln	40° 45.9' 96° 50.6'	Flood Control Recreation	30.0	6.2		0 0	0 0				
NECMR00 702 (USCE) Yankee Hill	Cardwell Branch		Lancaster Lincoln	40° 43.8' 96° 46.9'	Flood Control Recreation	40.0	5.5		0 0	0 0				
NECMR00 703 (USCE) Holmes Lake	Antelope Creek		Lancaster Lincoln	40° 46.9' 96° 38.2'	Flood Control Recreation	52.0	2.9		0 0	0 0				
NECMR00 704 (USCE) Olive Creek	Olive Creek		Lancaster Sprague	40° 35.1' 96° 50.8'	Flood Control Recreation	25.0	8.1		0 0	0 0				
NEGMRK0 131 (USCE) Wilber	Big Blue R.		Saline Wilber	40° 33.9' 96° 56.9'	Hydroelectric	0	360.0		200 600	29 1,247				
NEYMRK0 498 (USCE) City of Crete	Big Blue R.	City of Crete	Saline Wilber	40° 36.6' 96° 56.9'	Inactive	11.5	342.0	253,600	0 0	1 0				
NE6MRK0 132 (USCE) Shestak Dam	Turkey Creek		Saline DeWitt	40° 33.9' 97° 3.5'	Reservoir with power - Breached	0	78.0	46,400	0 0	5,176 1,522				
NECMR00 248 (USCE) Twin Lakes	South Branch		Seward Lincoln	40° 49.5' 96° 57.3'	Flood Control Recreation	45.0	4.6		0 0	0 0				
NEYMRK0 497 (USCE) Shady Trail	Big Blue R.	Ne. Game & Parks Comm.	Seward Crete	40° 43.9' 97° 1.4'		14.39	122.0		0 0	1 0				
NEYMRK0 499 (USCE) Plant Site	West Fork	ABC Elec. Co., Inc.	Seward Crete	40° 42.1' 97° 6.4'		13.5	167.0	123,900	0 0	85 719				
NE6MRK0 134 (USCE) Seward Vie.	Lincoln Creek		Seward Seward	40° 54.8' 97° 8.7'		0	44.0	32,100	0 0	2,768 729				
NE6MRK0 135 (USCE) Beaver Crossing	West Fork		Seward Beaver Crossing	40° 46.7' 97° 18.2'		0	170.0		0 0	8,483 4,029				
NE6MRK0 115 (USCE) Surprise D.	Big Blue R.		Butler	41° 6.3' 97° 20.2'		0	27.0	17,400	0 0	0 0				
NE6MR00 203 (USCE) Skull Creek	Skull Creek		Butler	41° 22.1' 96° 57.2'		95.0	11.6		0 0	0 0				
NEIMR00 242 (USCE) Loup Diversion	Loup	Loup River Power	Nance Genoa	41° 23.6' 97° 49.3'	Hydroelectric	0	773.2	1,205,000	0 0	0 0				
NECMR00 251 (USCE) Hardenbrook	North Loup	North Loup	Valley Scotia	41° 35.7' 98° 54.4'	Irrigation	0	589.5	627,400	0 0	0 0				
NECMR00 249 (USCE) Sherman Res.	Oak Creek	DOI-USBR	Sherman Ashton	41° 18.1' 98° 52.0'	Irrigation Recreation	85.0	1.7		0 0	0 0				

1. Latitude and longitude, or section, township and range.

2. When column has second figure in parenthesis, it represents information from a second source that doesn't agree with the first source.

Inventory of existing Hydroelectric Damsites in Nebraska

Site Identification (Agency) Project Name	Stream	Owner	County/ Nearest Downstream Town	Location[1]	Purpose/ Status	Net Power Head (ft)	Inflow[2] (cubic feet per second)	Avg. Annual Flow (acre feet/year)	Existing[2] Capacity (kw)/ Average (mwh) Annual Energy	Incremental Capacity Energy	Condition Power House & Facilities	Present use of Dam	Type & Condition of Dam	Access Road Condition
NECMR00 674 (USCE) Kearney Res.	Kearney Canal	Nebr Public Power Dist.	Buffalo Kearney	40° 42.2' 99° 5.9'	Hydroelectric Recreation	0	0		0 0	0 0				
NEIMR00 706 (USCE) Midstate P.	Wood River		Buffalo	41° 0.0' 98° 36.3'		138.0	0		0 0	0 0				
NECMR00 673 (USCE) Spring Creek	Tri-Spring	Dawson Co.	Dawson Lexington	41° 0.7' 99° 58.3'	Flood Control ---	31.0	1.5		0 0	0 0				
NECMR00 679 (USCE)	East Midway	Central Ne. P.P.I.D.	Dawson Cozad	40° 46.5' 100° 1.1'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMR00 683 (USCE) Earth Dam	Plum Creek	Central Ne. P.P.I.D.	Dawson Lexington	40° 42.0' 99° 55.1'	Hydroelectric Irrigation	66.0	0.6		0 0	0 0				
NECMR00 684 (USCE) Earth Dam	Gallagher	Central Ne. P.P.I.D.	Dawson Lexington	40° 44.4' 99° 58.9'	Hydroelectric Irrigation	41.0	2.9		0 0	0 0				
NECMR00 685 (USCE)	East Midway	Central Ne. P.P.I.D.	Dawson Cozad	40° 47.1' 100° 2.7'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMR00 686 (USCE) Earth Dam	Central Midway	Central Ne. P.P.I.D.	Dawson Cozad	40° 47.9' 100° 3.5'	Hydroelectric Irrigation	52.0	0.6		0 0	0 0				
NECMR00 687 (USCE)	Central Midway	Central Ne. P.P.I.D.	Dawson Cozad	40° 47.7' 100° 5.0'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMR00 688 (USCE)	Brown Canyon	Central Ne. P.P.I.D.	Dawson Cozad	40° 48.9' 100° 5.5'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMR00 689 (USCE)	Tri-Platte	Central Ne. P.P.I.D.	Dawson Cozad	40° 50.3' 100° 8.3'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMR00 212 (USCE) Earth Dam	Hiles (Litt)	Central Ne. P.P.I.D.	Dawson Gothenburg	41° 51.1' 100° 10.1'	Hydroelectric Irrigation	0	380.7		0 0	0 0				
NECMR00 213 (USCE) Earth Dam	Plum Creek	Central Ne. P.P.I.D.	Dawson Lexington	40° 42.2' 99° 55.3'	Hydroelectric Irrigation	17.0	250.0		0 0	0 0				
NECMR00 214 (USCE) Dawson County	Platte R.	Nebr Public Power	Dawson Lexington	40° 50.5' 99° 59.6'	Irrigation	0	540.5	(1979) 277,900	0 0	0 0				
NECMRK0 124 (USCE) Harlan County	Republican		Harlan Naponee	40° 3.9' 99° 12.6'	Flood Control Irrigation	0	436.0	200,700	0 0	1,439 3,341				
NECMR00 680 (USCE) Earth Dam	Platte off.	Central Ne. P.P.I.D.	Gosper Lexington	40° 41.6' 99° 46.9'	Hydroelectric Irrigation	46.0	2.9		0 0	0 0				
NECMR00 681 (USCE)	Platte off.	Central Ne. P.P.I.D.	Gosper Lexington	40° 41.8' 99° 47.3'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMR00 682 (USCE)	Platte off.	Central Ne. P.P.I.D.	Gosper Lexington	40° 41.8' 99° 48.4'	Hydroelectric Irrigation	0	0		0 0	0 0				
NEIMR00 224 Earth Dam	Platte off.	Central Ne. P.P.I.D.	Gosper Lexington	40° 40.8' 99° 44.6'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMRK0 118 (USCE) Harry Strunk Lake	Medicine Creek	DOI- USBR	Frontier Cambridge	40° 22.6' 100° 13.0'	Irrigation Flood Control Recreation	0	68.0	45,640	0 0	0 0				

1. Latitude and longitude, or section, township and range.

2. When column has second figure in parenthesis, it represents information from a second source that doesn't agree with the first source.

Inventory of existing Hydroelectric Damsites in Nebraska

Site Identification (Agency) Project Name	Stream	Owner	County/ Nearest Downstream Town	Location[1]	Purpose/ Status	Net Power Head (ft)	Inflow[2] (cubic feet per second)	Avg. Annual Flow (acre feet/year)	Existing[2] Capacity (kw)/ Average (mwh) Annual Energy	Incremental Capacity Energy	Condition Power House & Facilities	Present use of Dam	Type & Condition of Dam	Access Road Condition
NECMRKO 119 (USCE) Hugh Butler Lake	Red Willow	DOI USBR	Frontier Indianola	40° 21.5' 100° 39.8'	Irrigation Flood Control Recreation	0	29.0	17,790	0 0	0 0				
NECMRKO 125 (USCE) Swanson Lake	Republican	DOI USBR	Hitchcock Trenton	40° 10.2' 101° 3.5'	Irrigation Flood Control Recreation	0	138.0	64,410	0 0	786 1,729				
NECMRKO 117 (USCE) Enders Reservoir	Frenchman	DOI USBR	Chase Wauneta	40° 25.0' 101° 30.8'	Irrigation Flood Control Recreation	0	68.0	46,730	0 0	0 0				
NEIMROO 802 (USCE) North Platte	Platte Canal	N.P.P.D.	Lincoln North Platte	41° 5.9' 100° 48.0'	Irrigation Operational	0	0	45,570	26,100 100,000	0 0				
NECMROO 690 (USCE)	Tri-Platte	Central Ne. P.P.I.D.	Lincoln Brady	40° 58.2' 100° 26.9'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMROO 691 (USCE)	Snell Canyon	Central Ne. P.P.I.D.	Lincoln Brady	40° 58.2' 100° 28.0'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMROO 692 (USCE)	Target Can.	Central Ne. P.P.I.D.	Lincoln Brady	40° 58.8' 100° 28.4'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMROO 693 (USCE)	Target Can.	Central Ne. P.P.I.D.	Lincoln Brady	40° 29.8' 100° 29.2'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMROO 694 (USCE)	Target Can.	Central Ne. P.P.I.D.	Lincoln Brady	40° 59.9' 100° 29.2'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMROO 695 (USCE)	Target Can.	Central Ne. P.P.I.D.	Lincoln Brady	41° 0.1' 100° 29.7'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMROO 696 (USCE)	Target Can.	Central Ne. P.P.I.D.	Lincoln Brady	41° 0.5' 100° 30.3'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMROO 697 (USCE)	Cottonwood	Central Ne. P.P.I.D.	Lincoln Brady	41° 0.7' 100° 31.1'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMROO 698 (USCE)	Box Elder Creek	Central Ne. P.P.I.D.	Lincoln Maxwell	41° 1.7' 100° 33.9'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMROO 699 (USCE)	Moran Canyon	Central Ne. P.P.I.D.	Lincoln Maxwell	41° 3.5' 100° 37.1'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMROO 700 (USCE)	Platte	Central Ne. P.P.I.D.	Lincoln Maxwell	41° 6.7' 100° 40.3'	Hydroelectric Irrigation	0	0		0 0	0 0				
NECMROO 236 (USCE) Sutherland	South Platte	Nebr. P.P.D.	Lincoln Sutherland	41° 7.6' 101° 8.2'	Hydroelectric Irrigation	51.0	41.9		0 0	0 0				
NE6MROO 705 (USCE) Structure	Brule Water		Keith	44° 8.0' 101° 54.0'	Hydroelectric Irrigation	0	5.8		0 0	0 0				
NEIMROO 215 (USCE) Lake McConaughy	North Platte	Central Ne. P.P.I.D.	Keith Keystone	41° 14.2' 101° 39.9'	Hydroelectric Irrigation Flood Control	13.6	1,496.6		50,000 100,000	0 0				
NECMROO 216 (USCE) Platte Valley	South Platte	Nebr. P.P.D.	Keith Paxton	41° 7.1' 101° 28.4'	Hydroelectric Irrigation	0	390.8		0 0	0 0				
NECMROO 217 (USCE) Keystone P.	North Platte	Nebr. P.P.D.	Keith Keystone	41° 12.8' 101° 38.1'	Hydroeletric Irrigation	0	530.7		0 0	0 0				

1. Latitude and longitude, or section, township and range.

2. When column has second figure in parenthesis, it represents information from a second source that doesn't agree with the first source.

Inventory of existing Hydroelectric Damsites in Nebraska

Site Identification (Agency) Project Name	Stream	Owner	County/ Nearest Downstream Town	Location[1]	Purpose/ Status	Net Power Head (ft)	Inflow[2] (cubic feet per second)	Avg. Annual Flow (acre feet/year)	Existing[2] Capacity (kw)/ Average (mwh) Annual Energy	Incremental Capacity Energy	Condition Power House & Facilities	Present use of Dam	Type & Condition of Dam	Access Road Condition
NECMR00 672 (USCE) Brule Creek	Brule Canyon	Twin Platte	Keith Brule	41° 6.7' 101° 54.7'	Flood Control	46.0	6.5		0 0	0 0				
NECMR00 678 (USCE) Crescent Lake	Tri-Blue Creek	Lake Water	Garden Lewellen	41° 41.8' 102° 23.9'	Irrigation	2.0	0.0		0 0	0 0				
NECMR00 245 (USCE) Lake Alice	North Platte	D.O.I. U.S.B.R.	Scottsbluff Scottsbluff	41° 59.2' 103° 37.8'	Irrigation Recreation	24.0	94.2		0 0	0 0				
NECMR00 246 (USCE) Lake Minatare	North Platte	D.O.I. U.S.B.R.	Scottsbluff Bridgeport	41° 55.0' 103° 30.0'	Irrigation Recreation	43.0	98.0		0 0	0 0				
NECMR00 244 (USCE) Lake Alice	North Platte	D.O.I. U.S.B.R.	Scottsbluff Bridgeport	41° 58.8' 103° 35.6'	Irrigation Recreation	8.0	94.8		0 0	0 0				
NECMR00 229 (USCE) Oliver Reservoir	Lodgepole	Kimball Irrig.	Kimball Kimball	41° 13.2' 103° 48.5'	Irrigation	38.0	11.0	8,040	0 0	0 0				

1. Latitude and longitude, or section, township and range.

Environmental and Institutional Barriers for the Big Blue River Damsites

1. Some initial displacement of wildlife during construction.
2. Some decrease in available land use due to increased storage.
3. There will be barriers to fish migration where dams have been breached.
4. There will be an increased sediment load during construction resulting in muddied discharge downstream.

Energy Demand in Area of the Big Blue River Damsites

The Nebraska Municipal Power Pool considers Beatrice to be the logical user of electricity from this source. Beatrice has no generating capacity of its own. Peak usage and projected peak usage are:

1977 27.4 Megawatts

1983 38 Megawatts

1995 68 Megawatts

ABBREVIATIONS

Abbreviations that appear in the Inventory of existing Hydroelectric Damsites in Nebraska.

USCE = United States Corps of Engineers

NPPD = Nebraska Public Power District

LPPD = Loup Public Power District

CNPP&ID = Central Nebraska Public Power and Irrigation District

Norris PPD = Norris Public Power District

Res/Div = Reservoir and Diversion

DOI USBR = Department of Interior, United States Bureau of Reclamation

kw = kilowatt

mw = megawatt

mwh = megawatt hour