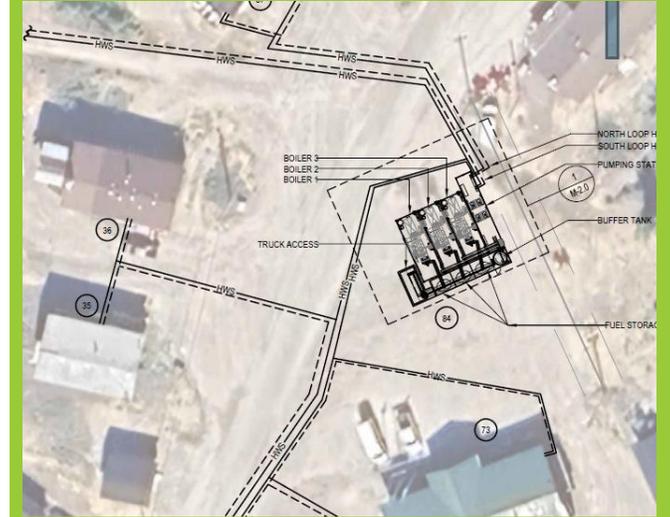


Wekweeti Wood chip District Heating Network Project

Arctic Bioenergy Summit
January 27, 2026
Yellowknife, NT

Presenter: Fred Behrens
Wekweeti - Senior Admin Officer
867-445-4394



District Heating Network (DHN) Design Phase

Rocky Point Engineering visited Wekweeti in May 2025 to research and start detailed design phase, funded by FCM-GMF

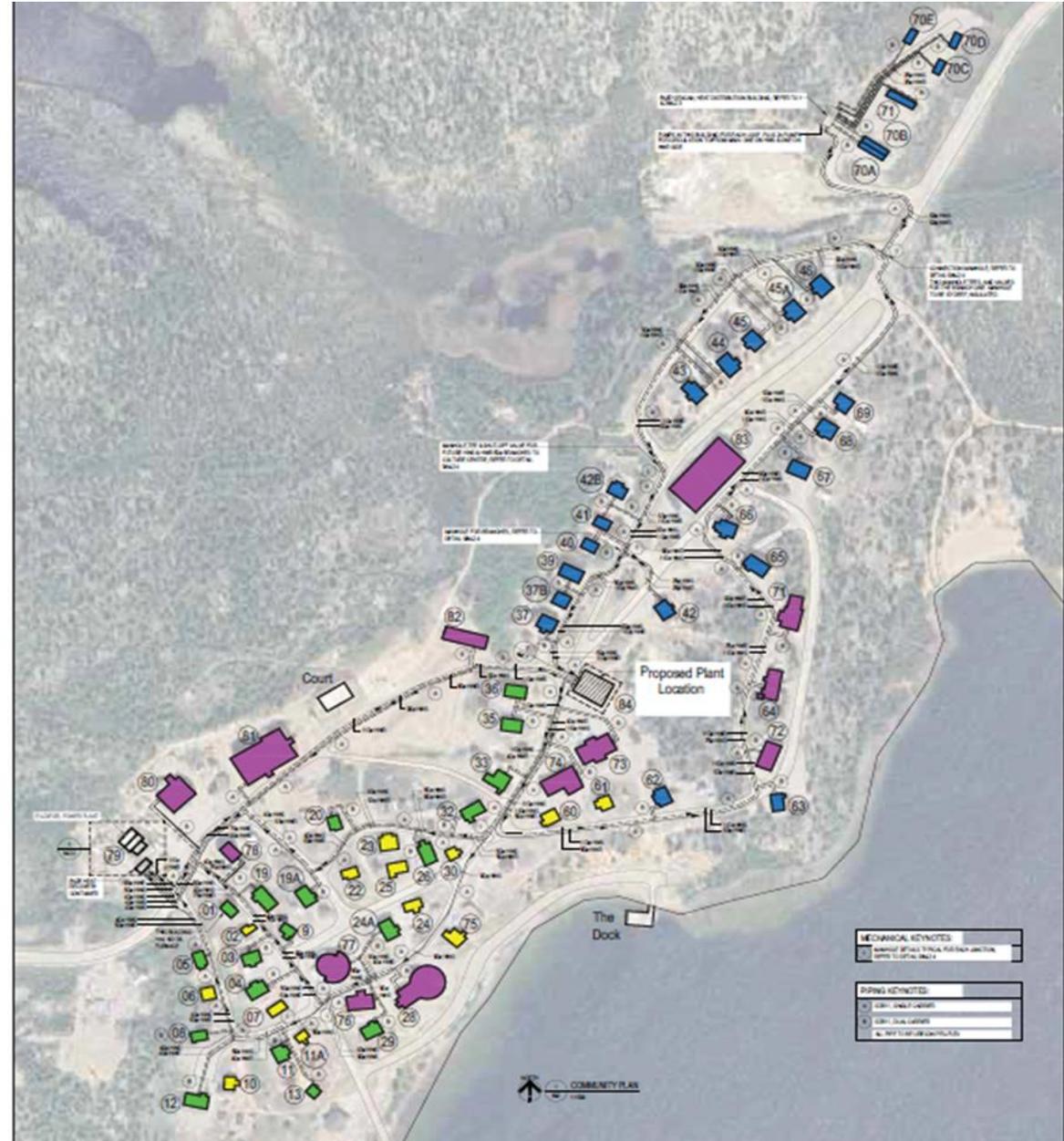
Design includes thermal heat plant, District Heating Network (DHN), building connections, and diesel heat capture

Designed to connect all 14 institutional buildings and up to 44 homes

Ability to connect future buildings

Class B Cost Estimate has now been completed based on these detailed design drawings

District Heating Network map



FCM-GMF Detailed Design Phase

Detailed design phase is focused on thermal heat for up to 95% of community buildings and homes

Current plan is to capture 53% of annual heat requirements from Naka Power diesel generators.

Will require an additional 210 Air dried tonnes (ADT) of locally produced wood chips per year for winter season

Requires an underground District Heating Network(DHN) supplying hot water heat to the vast majority of buildings

Rocky Point Engineering (RPE) has completed detailed mechanical drawings, leading to more accurate capital cost estimate for potential capital funding

Current design and Class B Cost Estimate presented to Chief and Council

Motion granting permission to seek suitable capital funding passed unanimously on November 10, 2025.

Complete building list for Wekweeti community

Residential Homes - Eastside									
Building ID#	Building Name	Square Footage	FORCED AIR	CRAWL SPACE	SHEET No.	HTG LOAD (kW)	HTG WATER FLOW (L/s)	HWS BRANCH PIPE ø	HWR BRANCH PIPE ø
37	Nora Simpson	600	YES	NO		6.75	0.17	20ø	20ø
37B	OSW Housing	400	NO	NO		4.32	0.11	20ø	20ø
39	Mary Adele Tsoahie	800	YES	NO		8.21	0.21	20ø	20ø
40	Celalia's Property	700	NO	NO		6.99	0.18	20ø	20ø
41	OSW Housing	400	NO	NO		4.32	0.11	20ø	20ø
42	Learn Rabesca	1,200	YES	NO		11.99	0.30	25ø	25ø
42B	Barbara Boline	600	YES	NO		6.75	0.17	20ø	20ø
43	Cecilia Judas	1,000	YES	NO		9.99	0.25	25ø	25ø
44	Helen Dryneck	1,000	YES	NO		9.99	0.25	25ø	25ø
45	Adele Football	1,000	YES	NO		9.99	0.25	25ø	25ø
45A	Kim Football	1,000	YES	NO		9.99	0.25	25ø	25ø
46	TCSA Housing	1,000	YES	YES		9.99	0.25	25ø	25ø
70A	Andreama Beaulieu	947	YES	YES		7.57	0.19	25ø	25ø
70B	Danielle Judas	947	YES	YES		7.57	0.19	25ø	25ø
71	Lance Lennie	1,055	YES	NO		10.54	0.27	25ø	25ø
70C	Future Modular Home	581	NO	NO		4.64	0.12	25ø	25ø
70D	Future Modular Home	581	NO	NO		4.64	0.12	25ø	25ø
70E	Future Modular Home	581	NO	NO		4.64	0.12	25ø	25ø
62	Kathy Dryneck	1,000	YES	YES		9.99	0.25	25ø	25ø
63	TTC Housing	1,356	YES	NO		13.55	0.34	25ø	25ø
65	Mary Adele Arrowmaker	1,200	YES	NO		11.99	0.30	25ø	25ø
66	Johnny Arrowmaker	1,200	YES	NO		11.99	0.30	25ø	25ø
67	Gilbert Boline	1,000	YES	NO		7.99	0.20	25ø	25ø
68	Fred Behrens	1,145	YES	NO		9.15	0.23	25ø	25ø
69	Pamela Lamouelle	1,000	YES	NO		7.99	0.20	25ø	25ø
25	Total	22,293				211.53	5.33		
44	East and West Total	43201				433.57	11		

Residential Homes - Westside									
Building ID#	Building Name	Square Footage	FORCED AIR	CRAWL SPACE	SHEET NO.	HTG LOAD (kW)	HTG WATER FLOW (L/s)	HWS BRANCH PIPE ø	HWR BRANCH PIPE ø
1	Liza Tom	900	NO	YES		NA	NA	NA	NA
3	Trevi Washe	1,372	NO	YES		13.71	0.35	25ø	25ø
4	Celine Ekyefuo	1,561	YES	YES		15.60	0.40	25ø	25ø
5	TTC Housing	800	NO	NO		9.99	0.24	25ø	25ø
8	Belinda Pea's	969	YES	NO		9.68	0.25	25ø	25ø
9	Alfred Laboline	700	NO	NO		6.99	0.18	25ø	25ø
11	Sam Simpson	1,000	NO	YES		9.99	0.25	25ø	25ø
12	Noelle Kodan	1,292	YES	NO		12.91	0.33	25ø	25ø
13	Unnamed	1,000	YES	NO		9.99	0.25	25ø	25ø
19	Therese Laboline	1,464	YES	NO		14.63	0.37	25ø	25ø
19A	Dora Tom	1,000	YES	YES		9.99	0.25	25ø	25ø
20	Joseph Whane	1,250	YES	YES		15.32	0.39	25ø	25ø
24A	Betty Pea's	1,000	YES	NO		9.99	0.25	25ø	25ø
26	Carol Arrowmaker	1,200	YES	NO		9.99	0.25	25ø	25ø
29	Virginia Lamouelle	1,000	YES	NO		9.99	0.25	20ø	20ø
32	Joseph Judas	1,000	YES	YES		13.99	0.35	25ø	25ø
33	Lisa Judas	1,200	YES	NO		27.70	0.70	32ø	32ø
35	TSCA House	1,000	YES	NO		9.99	0.25	25ø	25ø
36	Robert Pea's	1,200	YES	NO		11.99	0.30	25ø	25ø
19	Total	20,908				222.04	5.61		

Institutional Buildings									
Building ID#	Building Name	Square Footage	HTG SYSTEM	CRAWL SPACE	SHEET No.	HTG LOAD (kW)	HTG WATER FLOW (L/s)	HWS BRANCH PIPE ø	HWR BRANCH PIPE ø
28	Ticho Gov. Office	4,515	HTG WATER	YES	M-3	33.05	0.84	40ø	40ø
64	Grocery Store	2,473	FORCED AIR	YES		18.82	0.48	32ø	32ø
71	Shere Lodge	3,225	HTG WATER	YES	M-4	25.50	0.65	32ø	32ø
72	St. Peter's Church	2,365	HTG WATER	YES	M-5	19.39	0.49	32ø	32ø
73	Wekweeti Office	3,221	HTG WATER	NO	M-6	27.35	0.69	32ø	32ø
74	Youth Centre	3,442	FORCED AIR	NO		30.24	0.77	32ø	32ø
76	Fitness Centre	1,955	FORCED AIR	NO		17.75	0.45	32ø	32ø
77	Ticho Arbor	1,613	HTG WATER	YES	M-7	15.11	0.38	25ø	25ø
78	Firehall	1,452	HTG WATER	NO	M-8	14.03	0.36	25ø	25ø
79	Diesel Power Plant cont.	NA	NA	NO	M-2,2	NA	NA	NA	NA
80	Maintenance Garage	4,100	HTG WATER	NO	M-9	42.02	1.07	40ø	40ø
81	School	10,535	HTG WATER	YES	M-10	111.06	2.82	63ø	63ø
82	Daycare	2,432	FORCED AIR	YES		26.35	0.67	32ø	32ø
83	Cultural Centre	4,515	(FUTURE)	NO		50.24	1.27	50ø	50ø
84	Biomass Heating Plant	N/A	HTG WATER	NO		NA	NA	NA	NA
15	Total	45,843				430.91	10.94		

Non-Connectable Buildings		
Building ID#	Building Name	Square Footage
2	Original House	Small
6	Adele Old House	Small
7	Original House	Small
10	Unnamed	689
11A	Original House	Small
22	Old Radio Station	1,200
23	George Arrowmaker	1,120
24	Pea's Old House	Small
25	Arrowmaker Old House	Small
30	Judas Old House	Small
60	Football Old House	Small
61	Storage for TG	Small
75	TG Kitchen	Medium
13	Total	

Wood chip heat plant design

The heat plant is centrally located, creating two separate DHN zones

Minimizes pipeline sizes, distances, and material costs

Waste heat from the diesel generators is the primary heat source

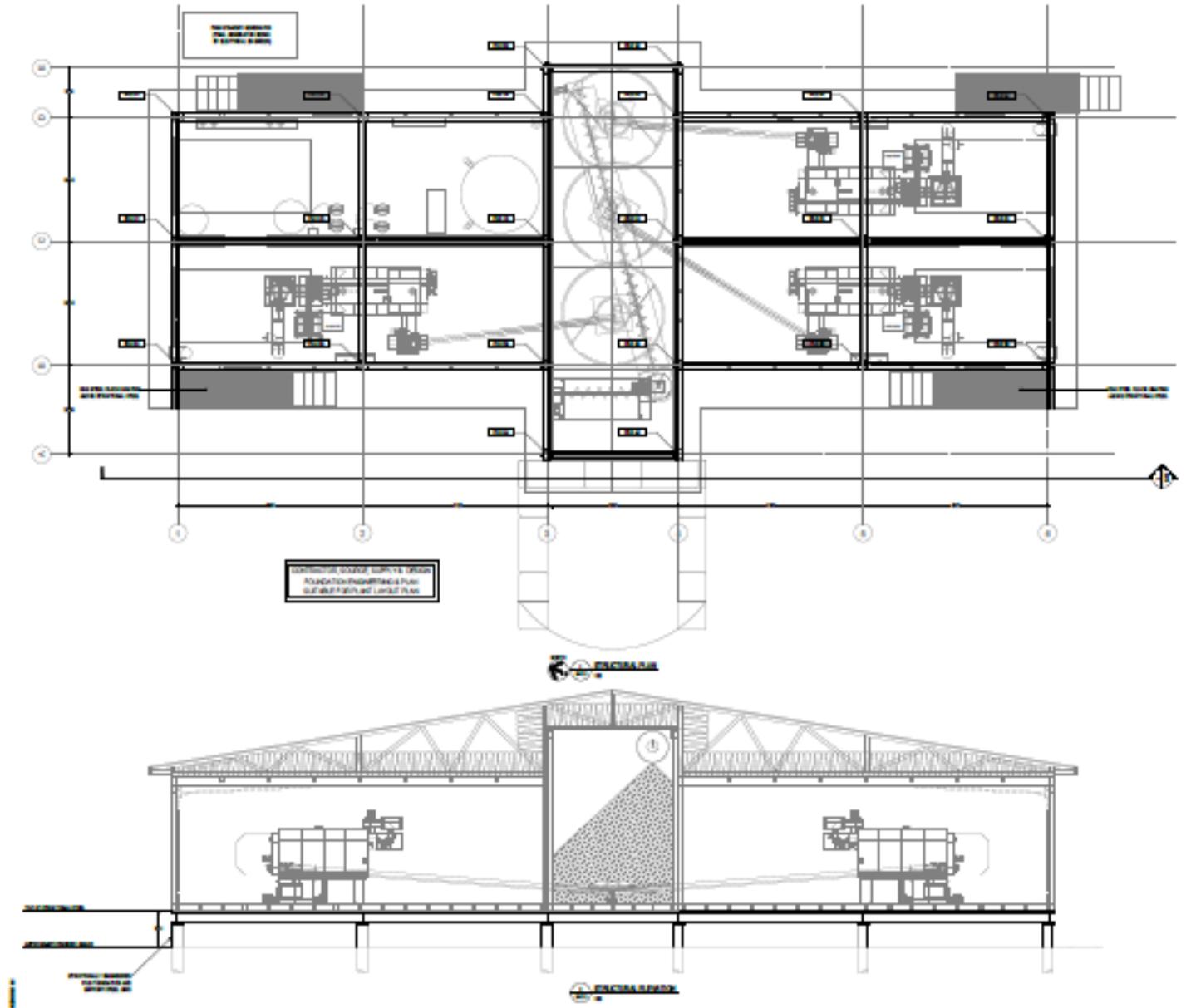
Wood chip supplied heat is only needed during winter months

Based on three – 300 Kw boilers

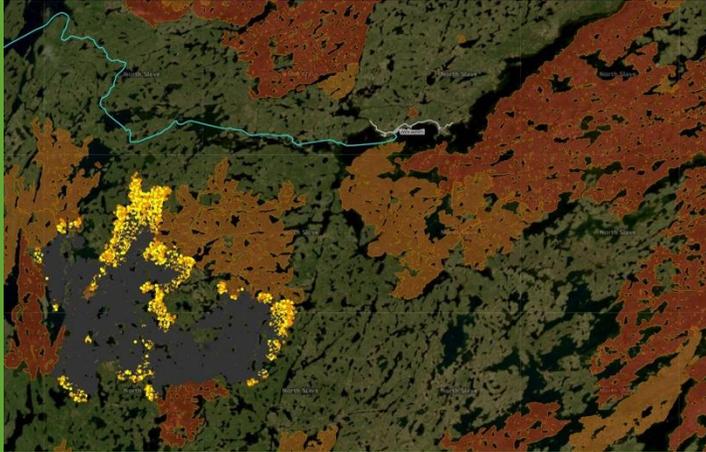
Heat plant and wood chip supply are contained in five – factory-built units to be shipped on the seasonal ice road

Modular units allow for easier and quicker installation once on site

Design includes back up generator



Project summary



What makes this project unique and innovative?

- Community is totally off-grid, relying on a seasonal ice-road
- Project has been studied since 2023 and detailed design is now completed, based on four specific funding grants.
- Community mandate is to supply 95% of annual thermal heat
- Designed to capture over 50% of thermal heat from diesel-powered generators that operate year round
- Biomass Heat plant is modular, contains 3 -300 kW boilers, and built to store and use locally produced wood chips
- After three community engagement meetings and four Chief and Council meetings, community support is growing stronger
- The Community Government of Wekweeti manages 17,000 hectares of community owned forest lands surrounding village
- The Fall 2025 FireSmart program is demonstrating that forest management, fuel procurement, and wildfire risk reduction programs are compatible, economical and feasible.
- Wekweeti is implementing a step by step, proactive approach towards energy sustainability and wildfire management

Next Steps for Wekweètì

Seek and apply for suitable capital funding for the proposed DHN project

Update business plan based on actual data from 2015 FireSmart program

Negotiate acceptable capital funding for procurement and construction of DHN

Continue with FireSmart program and create wood chips from 2025 harvest

Seek Chief and Council approval and sign acceptable contribution agreement

Create tender package, distribute, and award

Work with experienced supplier and installer to install DHN and connect buildings

Build, commission, own + operate

