



January 15, 2010

**The Board of Education of School District No. 83
(North Okanagan-Shuswap)**

**REQUEST FOR PROPOSAL
RFP 10-01**

**Professional Services & Technical
Assistance with Respect to
BC Hydro
Continuous Optimization for
Commercial Buildings**



Request for Proposal

1.1 Context

- 1.2** The Board of Education of School District No. 83 (North Okanagan-Shuswap) has entered into an agreement with British Columbia Hydro for five (5) school sites to implement the Continuous Optimization for Commercial (School) Buildings Program.

2.1 Intent

- 2.2** This Request for Proposal (RFP) is open to only service providers that have been approved by BC Hydro for its Continuous Optimization Program. The service provider must have the ability to work in the Armstrong, Enderby and Salmon Arm, British Columbia geographic area. The intention of this RFP is for the Board of Education of School District No. 83 (North Okanagan-Shuswap) to make a determination as to which Bidder is able to provide the best evaluated value for this program.
- 2.3** Evaluation Criteria and Process – Proposals received in response to this Request for Proposal (RFP) will be evaluated in accordance with the criteria contained in section 4.0. The Proposal which satisfies the mandatory criteria and which obtains the highest number of points under the point-rated criteria, as evaluated by the Board of Education of School District No. 83 (North Okanagan-Shuswap) may be selected. The successful Bidder will be required to enter into an agreement based on this RFP.
- 2.4** Bidders must ensure the Board of Education of School District No. 83 (North Okanagan-Shuswap) has all the information available in order to evaluate the Bidder best suited to award this proposal to. Short Listed Bidders may be expected to make a presentation not to exceed thirty (30) minutes in duration, excluding time for questions.



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3.1 Service Provider Scope of Work

This Scope of Work sets forth the professional services and technical assistance the Service Provider will supply for the BC Hydro Continuous Optimization for Commercial Buildings Program. The Facilities are as follows:

1. Pleasant Valley Secondary School
2. A.L. Fortune Secondary School
3. Shuswap Middle School,
4. Salmon Arm Secondary – Sullivan Campus
5. Salmon Arm Secondary – Jackson Campus.

See Appendix “B” for full information.

3.1 Program Deliverables

The Program Deliverables include the following items, prepared in accordance with the Program templates and guidelines:

3.1.1 Investigation Phase

- Findings Workbook (Investigation Progress Report), with bi-monthly updates;
- Findings Workbook (Master List of Findings); and
- RCx Investigation Report

3.1.2 Hand Off Phase

- RCx Final Report (with Training Completion Form and Implementation Summary Table); and
- Project Debrief with Program

3.1.3 Post Project Phase

- Coaching Session Reports

3.2 Investigation Phase

The Service Provider will conduct a rigorous and comprehensive on site investigation and analysis of the building operations, seeking to identify deficiencies and potential optimization in the operation of the building energy consuming systems and related controls. Although the identification of major



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retrofits is encouraged, the goal of the Program is to optimize existing equipment with minimal repairs and upgrades.

The tasks include, without limitation:

3.2.1 Arrange a kick-off meeting with the Applicant and appropriate facility staff to discuss any facility access and security issues, and to communicate the approach for the investigation process, including data acquisition. Coordinate the meeting with B.C. Hydro's Program Representative.

3.2.2 Gather information to define the Facility's Owner's Operating Requirements (OOR), including operational schedules, implementation limitations, etc. (template provided by the Program). Gather operational and maintenance information (template provided by the Program). Gather building documentation (plans, equipment schedules, schematic flow diagrams, specifications, equipment lists, etc.) to help understand the original design intent and it's relevancy to the Applicant's current operating requirements.

3.2.3 Investigate, and analyze the general types of systems:
Central Plant(s) including the following general types of equipment:

- Chillers
- Cooling Towers
- Boilers
- Pumps
- Control Systems

Central Air Handler(s)

- Fans
- Chilled water coils and valves
- Hot water coils and valves
- Dampers
- Control Systems, including VFDs and Outside Air and Economizer control.



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Zonal HVAC

- HVAC delivery to the Space (air and/or water distribution, whether dual duct, VAV terminals with re-heat, hydronic, etc.)
- Control Systems for HVAC delivery and zonal temperature control

Major Unitary Systems

- Water Source Heat Pumps
- Rooftop Package Units (15 Tons or over)
- Controls

Lighting Systems

- Interior Lighting Controls
- Exterior Lighting Controls

Refrigeration Systems

- Controls

Domestic Hot Water Systems

- Heaters/Boilers
- Controls

For similar equipment having similar operating schedules and serving similar occupancy types, sampling may be used for purposes of problem identification and baseline documentation/data collection (for sampling procedures see the *Investigation Guidelines* provided by the Program).

- 3.2.4** Gather operational and functional performance data to assess equipment operation and to identify deficiencies and measures for improvement. Gather data to quantify building operation, and deficiencies using the appropriate methods for the building including the building automation system to trend data, monitoring with portable data loggers, and on-site measurements. Obtain baseline data for identified measures, according to the Program's *Documentation Guidelines* provided by the Program for Optimization Measures. Any costs associated with this process are the responsibility of the Bidder.



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- 3.2.5** Track investigation activities using the *Findings Workbook* provided by the Program and report progress to BC Hydro and the Applicant on a monthly basis.
- 3.2.6** Use engineering calculations or simulation models to estimate the potential energy and demand impacts of implementing the identified measures for each utility (electricity, gas, steam, etc.), according to the Program's *Documentation Guidelines*.
- 3.2.7** Record and track investigation findings using the *Findings Workbook*. From the *Findings Workbook*, produce a *Master List of Findings*, including potential measures for implementation, energy savings, estimated implementation costs, and initial payback calculations.
- 3.2.8** Submit *Master List of Findings* to the BC Hydro Program Representative. Support each finding with data that clearly indicates the deficiency or problem, including engineering calculations, trend or portable logger data plots and files, functional test results, site visit reports, and photographs, as appropriate. These should be generated during the investigation process.
- 3.2.9** Meet with the Applicant and the BC Hydro Program Representative to present the *Master List of Findings*, and assist the Applicant in selecting measures for implementation.
- 3.2.10** Using the Program's template, produce the *RCx Investigation Report*, further detailing the actual measures that were selected for implementation. The *RCx Investigation Report* should provide information to assist the Applicant with implementation, including: recommendations for how to implement the selected measures, budget estimates or bid costs from the contractor(s) for the appropriate methods for verifying measures are operating as intended (refer to *Documentation Guidelines*).
- 3.2.11** The findings shall address the School District No. 83 Priorities for HVAC Optimization Appendix "A."



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- 3.2.12** Investigate the use of outside air as a building pre-cooling option.
- 3.2.13** Investigate how to optimize DDC Systems for School Building use in each season, (spring, summer, fall, winter).

3.3 Hand-off Phase

The tasks for the Hand-off phase include, without limitation:

- 3.3.1** Verify completion of each measure and update *Findings Workbook* with final implemented measures including final savings, costs, and payback calculations. To support the *Implementation Summary Table* (included in the *Findings Workbook*), selected measures with significant savings potential should have verification data demonstrating that the measures are operating as intended along with updated savings calculations. When feasible, verification data should include trends or functional test results, through other methods, such as copies of invoices, site visit reports and before/after photos, may be acceptable.
- 3.3.2** Conduct an in-house training presentation for the Applicant and the appropriate building operations personnel covering the new documentation, measures that were implemented, and requirements for ongoing maintenance and monitoring. Document the attendance of the building operations staff.
- 3.3.3** Submit a *Training Completion Form* according to the *Documentation Guidelines*.
- 3.3.4** Develop the *RCx Final Report* to document the implemented measures, including, but not limited to: new or improved sequences of operation, the energy savings impact of the measures, the requirements for ongoing maintenance and monitoring of the measures, and contact information for the Service Provider, in-house staff, and contractors responsible for implementation.
- 3.3.5** Conduct a project debrief with BC Hydro Program Representative.



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3.4 Post Project Phase

The tasks include, without limitation:

3.4.1 Conduct quarterly coaching sessions for the first year following the implementation of the optimization measures for a total of four coaching sessions. The session goals are to help ensure that the staff or service contractors responsible for the measures' continued performance are informed as to how each measure is expected to perform and understand how to operate and maintain each measure so the benefits last. Submit a *Coaching Summary Report* to the BC Hydro Program Manager after each quarterly coaching session.

3.5 Acceptance of Proposal

A Contract may be offered in response to the submission of a Request for Proposal.

3.5.1 The Board of Education of School District No. 83 (North Okanagan-Shuswap) reserves the right, at its discretion, to accept, reject or cancel any portion of this Proposal, or cancel without award the Proposal in its entirety; to continue or not to continue with subsequent phases of the project.

3.5.2 The Board of Education of School District No. 83 (North Okanagan-Shuswap) shall, at its sole discretion, be the only determiner of the acceptability and suitability of all or any one or more items or services for the purpose for which such items or services are required.

3.5.3 The Board of Education of School District No. 83 (North Okanagan-Shuswap) interpretation of all Proposal Clauses shall prevail.

3.5.4 The Board of Education of School District No. 83 (North Okanagan-Shuswap) reserves the right to not award the Contract to the Bidder with the highest points based on the Evaluation Criteria as outlined in section 4.0, or to the bidder with the lowest price or to cancel the Proposal in its entirety and not to award to any of the bidders.



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3.5.5 Proposals that contain qualifying conditions or otherwise fail to conform to the RFP may, at the sole discretion of the Board of Education of School District No. 83 (North Okanagan-Shuswap), be disqualified or rejected.

3.6 Project Management Information

- 3.6.1** The Bidder shall outline the history, specialization, assigned roles and responsibilities, and key qualifications of individuals who are part of the Bidder's proposed Project Management Team, including Engineering Consultants. As well, the Bidder shall list similar scope projects carried out by these individuals in the last five (5) years. If the Bidder is a joint venture or if external forces will carry out any portion of the work, the Bidder shall clearly identify the roles/functions to be carried out by the third party or joint venture; as well as describing in detail the working relationship with the third party or joint venture.
- 3.6.2** In respect to demonstrating the Bidder's experience and success with Feasibility Studies; the Bidder shall provide the Board of Education of School District No. 83 (North Okanagan-Shuswap) a list consisting of three (3) related projects completed in the last five (5) years. The Bidder shall select projects with similar scope, content, climatic conditioning, process and challenges. The Bidder shall also provide contact names and phone numbers of references for each project listed.
- 3.6.3** The Bidder shall present and demonstrate their ability to integrate this Project into its current schedule and workload.
- 3.6.4** The Bidder shall describe how its offices intend to service this Project. If the Bidder does not have an office located within one hundred fifty (150) kilometres of the sites, the Bidder shall explain how this obstacle will be overcome.
- 3.6.5** The Bidder shall provide an organizational chart depicting the management structure proposed for this Project, including relationship structure (who deals with whom) in respect to the project team and the Board of Education of School District No. 83 (North Okanagan-Shuswap).



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3.6.6 The Bidder shall provide a work plan schedule for the three phases including dates and estimated hours.

4.1 Evaluation Criteria

4.2 Mandatory Criteria

4.2.1 Submission of Proposal – must be received at the district administration office of The Board of Education of School District No. 83 (North Okanagan-Shuswap), 220 Shuswap Street NE, Salmon Arm, BC by no later than 4:00 p.m. (Pacific Standard Time) Friday February 19, 2010.

4.3 Point Rated Criteria

Criteria have been established to address desired services for the Contract. The point value of each criterion shall be multiplied by the percentage grade to give the criterion score. All scores will be summed to give the grand total score.

4.3.1 Financial – Score based competitive pricing as evaluated by the Board of Education of School District No. 83 (North Okanagan-Shuswap).

Criteria	Points
Lowest calculated and evaluated bid price	70
Hourly rate for additional services not covered in the Proposal	5
Experience with previous projects (of similar size and scope) being delivered on schedule and within budget	15
Financial Viability and Capacity – assessment of the viability of the financial offer and the capacity of the bidder to meet their obligations under the terms and conditions of the Proposal	10
TOTAL	100



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4.3.2 Investigation Phase

Criteria	Points
Process for conducting site investigation	25
Process for conducting Hand Off Phase	25
Process for conducting Post Project Phase	25
Approach to analysis of building operation and identifying deficiencies and potential optimization	20
Clear concise Proposal and Presentation	5
TOTAL	100

4.3.3 Project Management

Criteria	Points
Qualifications and experience of key personnel on the Project	20
Firms experience and success on similar Projects	20
Firms experience in building design in the Okanagan area or an area with similar climatic conditions	35
Local Office Support (within 150 km's of Armstrong/Enderby/Salmon Arm)	10
Structure of the personnel that will work on the Project. Degree of shared responsibilities between the Bidder and external sources	10
Fit of this Project into Bidder's Business and Workload	5
TOTAL	100

4.4 Category Weighting

Each category of the point rated criteria will be weighted as follows:

Financial	100 points	x	0.20	=	20%
Implementation	100 points	x	0.40	=	40%
Project Management	100 points	x	0.40	=	40%
GRAND TOTAL					100%



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5.1 Basis of Selection

- 5.2** The successful Bidder may be the one with the highest number of points (or percent) in the Point Rated Criteria or any other Bidder that the Board of Education of School District No. 83 (North Okanagan-Shuswap) wishes to engage. The Board of Education of School District No. 83 (North Okanagan-Shuswap) may not accept the lowest price or any RFP. The Board of Education of School District No. 83 (North Okanagan-Shuswap) will not be limited as to its criteria for evaluation of the RFPs.

6.1 Oral Presentation

- 6.2** Bidders who have been short listed will be required to make an oral presentation to the Board of Education of School District No. 83 (North Okanagan-Shuswap) to discuss their approach in implementing this Program and to provide an opportunity for mutual questions.
- 6.3** Presentations will be scheduled in Salmon Arm, BC for March 03, 2010. The presentation shall last no longer than 30 minutes; questions period to follow.

7.1 Conditions of Submission

- 7.2** Submission of a Proposal is deemed as acceptance of all the terms and conditions stated in this RFP.
- 7.3** The Board of Education of School District No. 83 (North Okanagan-Shuswap) shall not be responsible for costs incurred for the preparation and submission of Proposals in response to this RFP. The Board of Education of School District No. 83 (North Okanagan-Shuswap) reserves the right to reject any or all Proposals submitted, or to accept a Proposal in its entirety with or without negotiation.
- 7.4** **Pricing** – Proposals are to contain a firm stipulated sum costing for all services and travel. The Bidder shall also clearly state their hourly rate for additional services (only when requested in writing by the Board of Education of School District No. 83 (North Okanagan-Shuswap)).



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8.1 Building Automation System Information - On-Line Access

- 8.2** The School District will provide a web link for direct access to the buildings automation system, which includes room temperatures, damper positioning, CO² levels, etc.

Please contact Ross Higgins at 250-804-7834 for access codes.

9.1 Submissions

- 9.2** Bidders shall provide four (4) copies of their Proposal (one original and three copies) to be received at the below address by no later than 4:00 p.m. on Friday February 19, 2010.

Sealed Proposal shall be addressed as follows:

Contact Person	Bruce D. Hunt, CGA, Secretary Treasurer
Address	220 Shuswap Street NE PO Box 129, Station Main Salmon Arm, BC V1E 4N2
Telephone	250-804-7831



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10.0 RFP Required Information

Please address the following in your Proposal (attach responses on a separate page):

Direction	Attached (please √)	Comment
Indicate that your bid includes everything that is listed in the preceding "Scope of Work" Sections 3.0, 3.1, 3.2, 3.3, 3.4. If you will not be performing all the work provide detailed information on what will not be included and explain.		
Provide information on the length of time you have been in business, size of your company.		
Provide information on your company's experience in the energy management field and in particular performing Continuous Optimization studies for BC Hydro in the K – 12 sector.		
Provide name(s) of the key contact person(s) who will perform the work outlined above, along with a summary of their experience performing similar work.		
Provide the names of Associations / Organizations of which you belong.		
Indicate how long from time of award your company could perform the study		_____days from award
Indicate the estimated number of hours and over how long a period it will take to perform each phase of the project (Investigation, Hand-off, and Post Project).		
Provide three references on page 15.		



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11.0 References

The Vendor is requested to provide references for the Services being Bid. Similar references are preferred.

Company Name:

Address:

Contact Name:

Position / Title:

Office & Cell Telephone:

Facsimile:

E-mail Address:

Company Name:

Address:

Contact Name:

Position / Title:

Office & Cell Telephone:

Facsimile:

E-mail Address:

Company Name:

Address:

Contact Name:

Position / Title:

Office & Cell Telephone:

Facsimile:

E-mail Address:



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12.0 Price

Please provide lump sum payment pricing for the “Scope of Work” for each phase as detailed below. The Price is to include all costs, including expenses (such as, but not limited to, travel time, travel costs, duplicating costs, computer time, communication cost, etc.). Show PST and GST separately as indicated.

	Description	Estimated Hours	Lump Sum Cost
1	Investigation Phase		\$ _____ \$ _____ GST \$ _____ PST
2	Hand-off Phase		\$ _____ \$ _____ GST \$ _____ PST
3	Post Project Phase		\$ _____ \$ _____ GST \$ _____ PST

Position/Name/Title	Hourly Rate



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13.0 Receipt Confirmation Form

To acknowledge your intent to respond and to receive any amendments or further information about this Request for Proposal it is requested that this form be returned immediately to:

Ross Higgins, Energy Manager
School District No. 83 (North Okanagan-Shuswap)
PO Box 129, Station Main
Salmon Arm, BC V1E 4N2
Phone: **250-804-7834**
Fax: **250-832-9428**

Closing date: Friday February 19, 2010

COMPANY NAME: _____

STREET ADDRESS: _____

CITY/PROVINCE: _____ **POSTAL CODE:** _____

MAILING ADDRESS IF DIFFERENT:

PHONE NUMBER: _____ **FAX NUMBER:** _____

CONTACT PERSON: _____

EMAIL ADDRESS: _____

SIGNATURE: _____

TITLE: _____

DATE: _____



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APPENDIX “A”

SD83 PRIORITIES FOR HVAC OPTIMIZATION

1. Ability to easily adjust each individual room set point even when Air Handler is common to multiple Rooms.
2. Where Air Handlers are supplying multiple areas, programming should allow for some deviation from set point so that one room which might require cooling will not cause SAT to be lowered and reheats in the other areas to reheat the air in rooms that don't need cooling.
3. Thermostats with the ability to adjust the set points up and down from the base set point will be restricted to no more than .5°C adjustment.
4. Where CO² sensors are monitoring the CO² levels of the interior space, the economisers will have a minimum opening of 0. Economizers will only open if there is a call for free cooling or CO² levels warrant flushing the space with outside air.
5. Cooling of interior spaces will have two set points with different criteria. When cool air is available outdoors, cooling will try and maintain 23°C in interior spaces. Mechanical Cooling will be restricted from running until interior space is above 24.5°C and will only maintain an average space temperature of 25°C.
6. When outdoor air temperatures are exceeding 30°C in the daytime, the heating should be prohibited from running for the next 24 hours regardless of what the interior space temperature is.
7. All building DDC Systems are to be interconnected to the Intrusion Alarm Systems so that building will remain in unoccupied mode regardless of scheduling.
8. When outside air is intruded into interior spaces supply air temperatures shall be monitored. If SAT needs to be tempered the preferred method will be to limit the amount of outside air. If heating is required temper the air then attention must be given to the interior space temperature do not exceed the heating set point. If CO² levels are causing the economiser to open up and SAT are low enough to cause the heating to run then the dampers will be allowed to open as required to maintain a temperature equivalent to the heating set point. By allowing the economiser to open more than what is calculated by the CO² controller will hopefully reduce the time the dampers are required to stay open.



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9. Optimization should be looked at in detail for chillers which supply cold water to cooling coils for comfort cooling. In order to reduce peak demands on chillers the investigation should include determining if it is more economical to pre-chill the water prior to call for a demand or strictly cool on demand. The goal will be to lower the peak demand charges while still maintaining set point temperatures.
10. Optimize controls for Domestic Hot Water Systems. Ensure Domestic Hot Water Pumps are connected to the DDC system and possibly interlocked to the intrusion Alarm System to stop circulation when building is not occupied.



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APPENDIX “B”

SUMMARY OF HVAC & BUILDING CONFIGURATIONS FOR BC HYDRO'S CONTINUOUS OPTIMIZATION PROGRAM

1. **Pleasant Valley Senior Secondary.** 2365 Pleasant Valley Road, Armstrong, BC. V0E 1B2.
 - 9123 M² Single Story Facility, consisting of 2 separate buildings constructed of 80% Masonry Block and 20% Wood Frame.**HVAC System is comprised of:**
 - HVAC Control by Delta Orca View 3.30 DDC System connected to Internet for Remote Operation.
 - Individual Packaged Natural Gas RTU's for each classroom for heating and cooling requirements.
 - Electric Forced Flow Heaters at each Entry Way.
 - Electric Force Flow Heaters in Male and Female Change Rooms.
 - Variable Electric Forced Flow Heater in Gym Foyer.
 - Several Exhaust Fans are connected to the DDC System.
 - Electric Base Board Heaters in cold rooms with outside walls.
 - Two 80US Gal 24KW 3Ø 208V Hot Water Tanks and Circ Pumps for the Gym Showers.
 - One 80US Gal 18KW 3Ø 600V Hot Water Tank and Circ Pump for Industrial Ed Building.
 - Two Natural Gas Hot Water Tanks provide HW for the Remainder of Building.
 - The majority of the circulation pumps or Domestic HW demands are not tied into the DDC System.
2. **AL Fortune Secondary.** 500 Bass Ave., Enderby, BC. V0E 1V2.
 - 6679 M² Single Story Facility constructed of 100% Masonry Block.**HVAC System is comprised of:**
 - HVAC Control by Delta Orca View 3.30 DDC System connected to Internet for Remote Operation.
 - Twelve Individual Packaged Natural Gas RTU's for 12 classrooms for heating and cooling requirements.
 - Three Engineered Air Natural Gas Multi-zone Units supplying 7 zones on MZ1, 5 zones on MZ2 and 6 zones on MZ3. Cooling Provided by Multi-Staged refrigeration Compressors.
 - Three 600V Electric Forced Flow Heaters at select Entry Ways.
 - Electric Base Board Heaters in cold rooms with outside walls.
 - Several Exhaust Fans are connected to the DDC System.
 - Three Makeup Air Units supplying heated makeup air for the shop areas.
 - Gas Domestic Hot water Tanks for the Gymnasium and the majority of school. A 4500 Watt electric Hat Water Tank supplies the Shops. No circulation pumps or Domestic HW demands are tied into the DDC System.



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3. **Shuswap Middle School.** 171 30th St. S.E., Salmon Arm, BC. V1E 4P2.
- 7598 M², 1.23 Story Facility constructed of 80% Masonry Block and 20% Wood Frame.
- HVAC System is comprised of:**
- HVAC Control by Delta Orca View 3.30 DDC System connected to Internet for Remote Operation.
 - Two Individual Packaged Natural Gas RTU's for 2 classrooms for heating and cooling requirements.
 - 28 Air Handlers of which 17 are zoned for multiple area control. All central Air Handlers have a Hot Water Heating coil and control valve, a Chilled water coil and control valve, an economiser and a Face and Bypass damper. The central air handlers have both a single speed supply and return fan. Any zones off the central air handler have a separate Hot water reheat coil in the duct supplying air to the zone.
 - Several Exhaust Fans are connected to the DDC System.
 - Several Hot Water Forced Flow Heaters in select corridors and entrances throughout the building.
 - Several Hot Water Radiant Panels blanketing exterior windows in select classrooms and hallways.
 - Four, Million BTU Pulse boilers to supply Hot water to the Heating coils in the AH's and reheat coils in air ducts.
 - A large central Air Cooled Chiller on the Roof supplies chilled water to the cooling coils.
 - A Million BTU pulse boiler heats three large HW Storage Tanks. Hot water demand and Circulation Pumps are tied DDC System
4. **SASS Sullivan Campus.** 1641 30th St. N.E., Salmon Arm, BC. V1E 4P2.
- 9620 M², 2 Story Facility constructed of 50% Masonry Block and 50% Non Combustibles.
- HVAC System is comprised of:**
- HVAC Control by Delta Orca View 3.30 DDC System connected to Internet for Remote Operation.
 - 10 Large Air Handlers of which 6 are zoned for multiple area control. All central Air Handlers have a Hot Water Heating coil and control valve, a Chilled water coil and control valve, an economiser and a Heat recovery Hydronic system. CO² sensors in the return ducts control fresh air volumes in the facility. The central air handlers have both a Variable speed supply and return fan. Any zones off the central air handler have a VAV boxes. Select VAV's have hot water reheat coils or an additional fan in them.
 - Several Hot Water Forced Flow Heaters in select corridors and entrances throughout the building.
 - Several Hot Water Radiant Panels blanketing exterior windows in select classrooms and hallways.
 - In floor heated slab floors in four select areas.



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- Four, Million BTU Pulse boilers to supply Hot water to the Heating coils in the AH's, reheat coils, radiant panels and in floor slab heat.
- Several Exhaust Fans are connected to the DDC System.
- The commercial kitchen ventilation system is tied to the DDC system.
- Two large central Air Cooled Multi-staged Chiller in a separate outdoor enclosure supplies chilled water to the central air handler in this facility.
- A Million BTU pulse boiler heats three large HW Storage Tanks. Hot water demand and Circulation Pumps are tied DDC System

5. **SASS JL Jackson Campus.** 551 14th St. N.E., Salmon Arm, BC. V1E 4S5.

- 7170 M², 2 Story Facility constructed of 60% Masonry Block and 40% Wood Frame.

HVAC System is comprised of:

- HVAC Control by Delta Orca View 3.30 DDC System connected to Internet for Remote Operation.
- 10 RTU's with individual water coils for coiling and heating and an economiser for fresh air control. 3 of the RTU units have additional hot water reheat coils in the ducts for multi-zone control for select classrooms.
- 2 Hot Water, heating only MUA units supply air to the shop areas.
- 22 individual Classroom ventilators control the air quality in the majority of the classrooms. Each ventilator has a Hot Water Heating coil and control valve, a Chilled water coil and control valve, an economiser and a self contained Heat recovery system.
- 3 Fan Coil units control the air quality in 3 different areas. All FC units have economisers, hot water coils for heating, and 2 have chilled water coils for cooling. The 3 unit has a DX coil for cooling year around in the data room.
- Forced Flow Heaters in select corridors and entrances throughout the building.
- Several Hot Water Radiant Panels blanketing exterior windows in select classrooms and hallways.
- Several Exhaust Fans are connected to the DDC System.
- Four, Million BTU Pulse boilers to supply Hot water to the Heating coils in the RTU's, FC's, MUA's, CV's, reheat coils, FF's and radiant panels.
- A large central Water Cooled Multi-staged Chiller in the basement supplies chilled water to the Cooling coils in the RTU's, FC's, and CV's.
- A 610,000 BTU natural gas HWT heats three large HW Storage Tanks. The Hot water demand and associated Circulation Pumps are not tied into the DDC System.