



SIEMENS



Trusted Partner Case Study

Algonquin College

A unique spirit of partnership between Siemens and Algonquin College makes for an energy services contract like no other

Siemens' Building Technology Group is a trusted advisor in helping Algonquin College become a sustainable institution of the future.

Algonquin College of Applied Arts and Technology, located in the nation's capital and the Ottawa Valley, is the largest college in Eastern Ontario, with 18,000 full-time and 36,000 part-time students in more than 180 programs. Algonquin is a leader in the integration of technology into learning, and is strongly committed to student success.

The college is also dedicated to becoming "Sustainable Algonquin College," with a vision in which all students, professors, administrators, staff and members of the broader Algonquin College community have a role to play.

Algonquin's commitment to environmental leadership has been demonstrated in many ways in recent years. For example:

- In 2007, reflecting its outstanding track record on protecting the environment, Algonquin became the first Canadian college to sign the Talloires Declaration, which commits post-secondary institutions around the world to being leaders in sustainability.
- Affirming that commitment, Algonquin signed on to the Association of Canadian Community College's Pan-Canadian Protocol for Sustainability on Earth Day in 2009.
- Algonquin opened four state-of-the-art, high-performance buildings in 2011 and 2012. Three have either achieved or are targeting Leadership in Energy and Environmental Design (LEED®) Gold certification. One has attained a LEED® Platinum certification.

Inviting bids on an Energy Services Contract (ESCO2)

A key element of Algonquin's focus on sustainability involves reducing the use of electricity, water and gas. This enables the college to minimize its ecological footprint, lower its operating costs, and have a compelling principle to follow when modernizing its infrastructure.

To accomplish these sustainability goals, Algonquin recognized the need for assistance from the private sector, where companies such as Siemens have the technical expertise that's required.



Siemens-Algonquin partnership: A unique energy services contract

\$51 million investment over 20 years

Collaborating on infrastructure upgrades for energy efficiency

- Includes introduction of new technologies, such as electricity cogeneration
- Resulting in \$3.7 million in annual operating cost savings

Algonquin serving as a "living lab" of Siemens' leading-edge green technologies

Co-developing internationally recognized applied research centre and other sustainability research projects

Jointly-created sustainability undergraduate courses and graduate certificate program, and sustainability integrated into curriculum of all undergraduate disciplines

Dedicated Siemens resource person on site to promote sustainability



"Siemens is investing not only in our infrastructure, but in the very matter of what we do as a college."

– John Tattersall, Director of Physical Resources at Algonquin College

Similar to the province's other 23 colleges, Algonquin is a not-for-profit Crown Corporation that adheres to the Colleges Act, which sets clear guidelines on how projects must be tendered, and contractors selected. Everything must be done in a public, open and transparent manner.

For this energy services contract – known internally at Algonquin by the acronym of ESCO2 – the college initiated a two-stage bidding process. The initial phase consisted of exploratory discussions with any interested company, in broad and general terms about what could be done for Algonquin.

That was followed by the college issuing a formal request for proposal (RFP) to a select group of companies. That short list included Siemens, which had already been working with Algonquin in various ways over the past 25 years.

The decision-making process

John Tattersall, Director of Physical Resources at Algonquin, is responsible for ESCO2 and drove the selection process.

He began the final stage with an open session. All the short-listed bidders invited to submit an RFP were in attendance. Tattersall, who served for 36 years in the Canadian military before joining Algonquin in 2011, gave them all a strong sense of what Algonquin had in mind.

"In that meeting, we said we're looking for people to go beyond the normal bounds of just a simple energy services contract," he says. "We were seeking people who could go to the very heart and purpose of what our college is all about. I spoke about partnerships, and what can be achieved when you have a shared vision, shared values, and are willing to share the management of risk."

The Choice of Siemens: Dramatically exceeding expectations

According to Tattersall, Algonquin envisioned an investment of about \$15 million from interested bidders to move the college forward on realizing its vision.

Siemens gave him quite a surprise.

"We were absolutely taken aback by Siemens. When we got the submission, it was for \$51 million. I actually phoned and asked if it was a typo."

Ray Rochefort, Energy Business Leader for Siemens, confirmed it was no mistake – that Siemens profoundly took to heart the direction Tattersall had communicated.

Siemens' bold proposal addressed not only all the technical energy infrastructure elements Algonquin needed and expected, but laid out plans for a far-reaching 20-year relationship.

It would be an arrangement in which:

- Siemens and Algonquin would work together on research initiatives;
- Algonquin would serve as a showcase and "living laboratory" of Siemens' leading-edge green technologies;
- Siemens would help educate students and faculty on sustainability; and,
- Siemens would become a catalyst for everyone at the college to embrace environmentally-conscious behaviour.

In short, Siemens would go far beyond what anyone at Algonquin could have envisioned to help the college realize its sustainability vision.



Breadth and depth of expertise

“We felt we could be not only a technically sound contractor, but also a company that could deliver significant value in a broader sense,” says Rochefort. “We demonstrated that we had a very deep understanding of Algonquin, such as their desire to expand their applied research. And we showed how we could tap into a number of other business units at Siemens to come up with new ideas and new possibilities.”

For example, a new unit at Siemens focused on lighting solutions brought creative ideas forward. Another group did the same with energy billing, while the Siemens Energy Microgrid team investigated and introduced a range of bold new power generation concepts.

As Tattersall put it: “It was clear to me that we were not just going to be backstopped here in Ottawa, by experts here in the home office. We were going to be backstopped by anyone in Siemens AG worldwide who could help us.”

Formal announcement

Executives from both organizations expressed their pride in the deal when it was officially announced in January of 2014.

Not long after a formal contract was signed, Tattersall invited Siemens to get directly involved with the college’s sustainability steering committee – serving as a trusted advisor in the development of Algonquin’s sustainability strategy.

The college refers to its long-term sustainability vision as “Algonquin College Unplugged.” There is a mission to “educate, operate, collaborate and innovate” for a clean energy future in which greenhouse gas emissions will be eliminated by 2042.

Electricity cogeneration

To help reach that ambitious goal, Siemens proposed and is now moving forward with a plan for cogeneration of electricity on site at Algonquin. The cogeneration infrastructure, with space allotted for it to eventually double in size, will use natural gas (with the possible use of multiple fuels being explored) to simultaneously produce electricity and heat for Algonquin’s buildings.

Rochefort believes the benefits for Algonquin from cogeneration will be profound.

“This is an example of the future world in which the college is not just a consumer of electricity but a producer too. It’s a very significant shift,” he says, noting how it will result in cleaner energy, greater energy efficiency, cost savings, and that it will also mean that emergency power will be available if there is a power outage with the public grid.

Comments Tattersall: “We never asked for cogeneration. We just asked for energy savings. It just gets to the heart of how innovative Siemens is. Changing us from an energy consumer to a producer has had so many spin-offs for us as a college, and what we can do for our city and for Eastern Ontario.

“And it was all thanks to Siemens’ innovation and their relationship with us,” he says, adding that many other new leading-edge ideas are being explored as well, such as solar photovoltaic panels.

Sustainability curricula, applied research and learning opportunities

As promising as all of the innovative technical and technological solutions are, what has Tattersall most excited – and what he describes as being at the heart of Siemens’ differentiation – is how Siemens is “investing not only in our infrastructure, but in the very matter of what we do as a college.”

For instance, Siemens and Algonquin have committed to work together on:

- integrating sustainability into the student curriculum of the college;
- collaborating on applied research projects focused on sustainability;
- creating specific career opportunities related to the environment; and,

applying the values, knowledge and skills related to corporate social responsibility and ecological stewardship to all career paths offered through the college, such as nursing, policing, recreation and culinary arts.

Achievements and expectations

Energy efficiency renovations at Algonquin’s buildings are already delivering great results. These span seven main areas:

- Water efficiency improvements (e.g. new fixtures)
- Heating, ventilation and air conditioning (HVAC) retrofitting
- Cooling tower replacement
- Chiller plant optimization
- Building automation control optimization
- Intelligent lighting controls
- Modernized kitchen equipment

These elements comprise the earliest phase of the overall project. Work began on that stage in 2013 and will continue through 2015. At that point, it’s expected that Algonquin will benefit from:

- annual operating cost savings of more than \$1.1 million;
- a reduction in deferred maintenance (i.e. infrastructure renewal costs) of \$10 million; and,
- carbon dioxide emissions being lowered by more than 1,200 tons each year.

The next phase of the plan – highlighted by the electricity cogeneration – will bring the total investment up to \$32 million. And it will lead to a further doubling of annual operating cost savings, reaching approximately \$2.2 million per year.

That trend continues right through the lifespan of the agreement. At the end of the 20-year payback period on the entire \$51 million project, projections are for the college to benefit from a savings of \$3.7 million annually.

In fact, Tattersall suggests those targets may be adjusted higher, because it’s still very early in the overall implementation and already some results have exceeded expectations. For example, water savings have reached 127% of what was forecast.

“Based on the water conservation measure, we’re predicting that the other facility improvements will similarly overperform and that’s becoming our expectation,” he says.

Beyond infrastructure

As for all the non-infrastructure initiatives, rapid progress is also being made, expectations are being exceeded, and the expected long-term results are generating a lot of excitement at Algonquin.

Among the highlights:

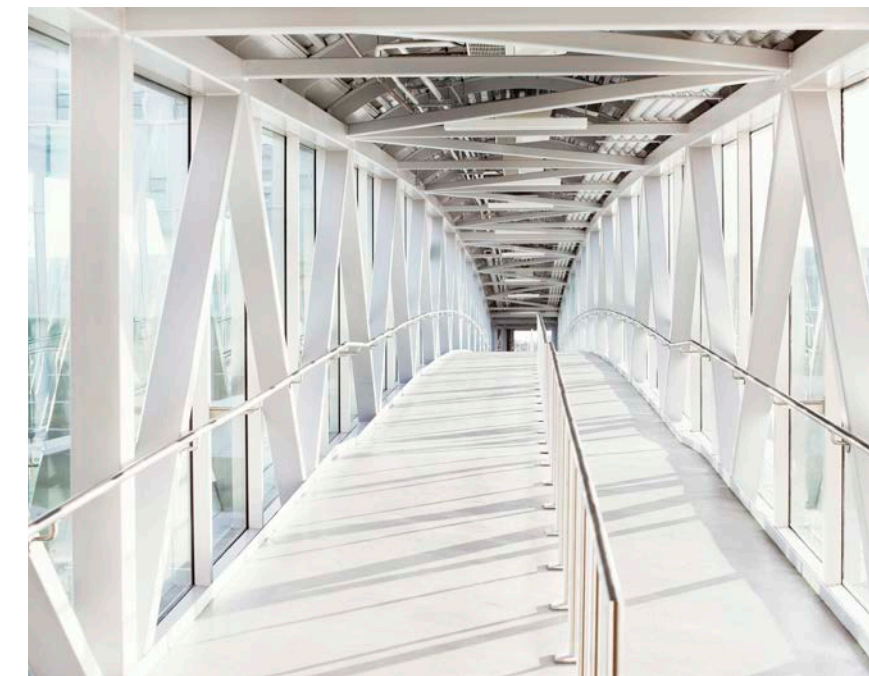
- The college and Siemens are collaborating to develop specific building technologies and environmental sciences curricula.
- They’ll be starting a graduate certificate program in sustainability for people who already have undergraduate degrees in areas relevant to facility management, such as civil and mechanical engineering.

- Sustainability has been integrated as a core component of Algonquin’s Ontario certificate programs.
- Nearly half of applied research projects at the college have demonstrated sustainability as integral to the undertaking.
- A dedicated Siemens resource person – Sarah Dehler, Sustainability Coordinator – is on site full-time with a five-year commitment to support Algonquin in reaching its sustainability goals, particularly on education and awareness initiatives.

In addition, demand response – which involves incenting and empowering electricity consumers to reduce their use – is an area that has been identified as having exceptional potential, and ambitious plans are in the works to capitalize on it.

“It’s taking the demand-response technologies that we’re installing in the college right now and educating a work force around that,” says Tattersall. “It’s somewhere between an engineer and a technologist and a technician – someone not just installing the widgets that make demand response-capable, and not just understanding, as an undergrad engineer does, the first-principle sciences and mathematics. It’s how you actually make it work in the real world. That’s an area where most of us acquire our knowledge through the school of hard knocks. We haven’t seen a program of study out there like that, so we’re developing it.”

Taking things one step further, Siemens and Algonquin are co-sponsoring an internationally recognized applied research centre on demand response. It will develop technology innovations and teach how those can be specifically applied to benefit institutions, cities and countries, Tattersall notes.



Making it all possible: A spirit of partnership between Siemens and Algonquin College

The success of Siemens' energy services contract with Algonquin College ultimately comes down to a remarkable working relationship between the two organizations.

Tattersall refers to it as a "spirit of partnership."

"When I was in the army, I was faced with an operational situation in the Balkans, where I discovered what strategic partnerships can do," he explains. "We had an embedded contractor with us, and they came up with ideas that were right to the heart of what we had to do. Their ideas won and we overcame huge obstacles. The lesson I learned from that is how strategic partners 'get' each other. They know each other inside out and they can offer constructive criticism or constructive ideas, and each of the two partners accepts that in the absolute spirit that it was meant."

He feels that's exactly the case with Siemens and Algonquin.

"We're all human. We all make mistakes," he says. "Sure, we had a couple stumbles as we were going from planning into delivery. In a contractual relationship, you can start getting angry at each other and you start pounding fists and you start asking for financial compensation and all that. That's aggravating to both sides. You walk away feeling a little bit dirty. But in our case, we said, 'You know, we've got a

problem here. Guys, let's sit down and talk.' And we talked in a very open way and found solutions by working together."

For example, he describes how one of the largest buildings at Algonquin is also one of the oldest, which required an overhaul of its mechanical systems. And yet, because about 6,000 students were using it, it couldn't be shut down while the work was being done and there was no money available to move them elsewhere. On top of that, the building is a visual signature of the campus that faces a major Ottawa thoroughfare, so it had to remain aesthetically pleasing during the process.

There were no easy answers, but by bringing everyone to the table in a spirit of partnership and collaboration, solutions were found and a comprehensive plan put in place – all in a matter of just days.

"That's what strategic partners can do when overcoming a negative," says Tattersall. "You can look at each other and you can have those discussions and no one gets upset. You work it out, and everyone says, 'We've got to make this work because we're all in this together.'"



"We're there as a partner, looking at their short-term goals as well as their long-term goals. I see Siemens and Algonquin being wonderful partners for years and years to come."

*– Scott Howes, Service Account Engineer,
Siemens Canada*

Turning Algonquin into a "living lab" for Siemens

At the same time, Tattersall emphasizes how great partnerships are not just about overcoming negatives. On the positive side, the possibilities are endless when the strengths of both organizations are fully utilized and each side is open to exploring new ideas and being innovative.

To illustrate the point, Tattersall outlines how Algonquin approached Siemens and suggested that if there is a relevant technology that is near market-ready, it could be brought to Algonquin for real-world testing.

"We said: 'Why don't we find an area in the college where we can experiment with this, then roll it across the college, and actually showcase it on your behalf? We'll use our college as a living lab on how your technologies are being used. And if people want to learn about it, we can run a course on it.'

"So it's combining Siemens and Algonquin to help society. If somebody's got an idea, they're not looking for obstacles, they're looking for challenges and how you overcome all that. That's the number one quality of innovation and that's what strategic partners can do together."

Siemens strives to understand the "why" and not just the "what"

Tattersall believes that the foundation for a great partnership between Siemens and Algonquin was laid long before any physical work began.

"It was clear that they had done detailed research of who we are, and what we are, and why we do what we do. They did all that research before even coming to us," he says.

The most important attribute that Siemens brought to the table as a strategic partner, he adds, is the ability to focus on the "why" and not just the "what."

"Most of our discussions were not about 'what are we doing?' It was the 'why are we doing this.' Traditional contracts are limited to the 'what' and the 'how,'" he says. "And many firms that bid for our contracts deliver solid proposals using that approach. Siemens, though, went well beyond the traditional proposal and got into the heart of the 'why.' We've got a partner who 'gets' us, from the President and CEO, right down to the people I deal with on almost a daily basis."

A partnership personified

Scott Howes is a member of the Siemens' team working with Algonquin College. As Service Account Engineer, he is responsible for liaising with Algonquin colleagues to ensure that all the control automation for the campus' HVAC systems is delivering optimal results.

He's also an instructor at the college, teaching a systems operations course through Algonquin's Centre for Continuing and Online Learning.

"You're teaching them the material from Algonquin and from your own experiences," he says. "You're trying to give them the best education you can. That gives students an opportunity to gain knowledge from Siemens that is world-class. Algonquin, I think, is really appreciative of that."

Scott's dual role personifies the strength of the partnership between the two organizations.

"We're there as a partner, looking at their short-term goals as well as their long-term goals. I see Siemens and Algonquin being wonderful partners for years and years to come."



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Siemens Canada Limited

1577 North Service Road East
Oakville, ON
Canada L6H 0H6

corporate.communications.ca@siemens.com

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