

SUNNYHILL HOUSING COOPERATIVE  
ENVISIONING THE FUTURE  
Prepared by The Communitas Group Ltd.  
November 2016

## BACKGROUND

In April of 2016 Sunnyhill engaged the services of the Communitas Group to work with its Planning and Development Committee and its membership to prepare a plan that the Cooperative could use to direct its future development. The scope of work included the preparation of background material for the Co-op's use: for a membership planning workshop, for the preparation of a vision and values matrix, for the development of various design scenarios and provide preliminary cost estimates for the scenarios, for an analysis of financing options that may be available to Sunnyhill, and finally, for the preparation of a final report. Through the course of the work a new reno/retro financing program was announced by Canada Mortgage and Housing Corporation (CMHC) for cooperatives and non profits that received funding assistance under a Federal Program and still had an operating agreement with CMHC. With the assistance of Communitas, Sunnyhill was also to use the results from this work to submit an application for funding under this new program. Communitas engaged the services of Jenkins Architecture Ltd. to undertake the design work.

## SETTING THE PATH FOR THE FUTURE

At the membership workshop that was held in July 2016, the members were asked to identify what they liked about their cooperative community and what their fears and concerns were about the future. The following table provides an overview of the members feedback .

What We Like	What are Our Concerns
<ul style="list-style-type: none"> <li>• community (re-occurring theme)</li> <li>•</li> <li>• affordability (re-occurring theme)</li> <li>• location (re-occurring theme)</li> <li>• connectedness with neighbours</li> <li>• not bought into market forces</li> <li>• community diversity               <ul style="list-style-type: none"> <li>• age</li> <li>• ethnicity</li> <li>• life style</li> <li>• income</li> </ul> </li> <li>• neighbours</li> <li>• balconies result in neighbourly community</li> <li>• volunteerism</li> </ul>	<ul style="list-style-type: none"> <li>• unknowns - in terms of what lies ahead</li> <li>• trepidation in terms of making big decisions</li> <li>• why make big changes- why not focus on the fundamentals</li> <li>• fundamentals of the operation</li> <li>• lease term- need to purchase land</li> <li>• expenditure of funds</li> <li>• just finished the landscaping project- not sure if we have learned everything from that project</li> <li>• why are we doing this now</li> <li>• households on fixed income</li> <li>• if the renovations are major, where do people live?</li> <li>• mobility and the ability to age in place</li> </ul>

In developing the plan for the future, the team looked at building on the positive aspects of the community and addressing the member's concerns.

## VISION AND VALUES MATRIX

The following Vision and Values Matrix that was finalized at the membership workshop in July is being used as the guiding document for the Cooperative as it moves ahead with its planning process.

The following were identified as key values by the Planning and Development Committee from the list of values developed during the planning charette held with the School of Environmental Design.

- environmental innovation
- affordability
- ability to age in place
- community connectedness
- family friendly

<b>Value</b>	<b>Values into Action</b>
<ul style="list-style-type: none"> <li>• environmental innovation</li> </ul>	<ul style="list-style-type: none"> <li>• eliminate green house gas generating energy sources for Sunnyhill</li> <li>• reduce energy consumption</li> <li>• reduce water consumption</li> <li>• use long life, low maintenance materials and equipment</li> <li>• add capacity to be regenerative eg. PV Panels</li> <li>• same % of green space as a minimum</li> </ul>
<ul style="list-style-type: none"> <li>• affordability</li> </ul>	<ul style="list-style-type: none"> <li>• post renovation economic housing charges should be no more than 0% higher than the current housing charges</li> <li>• at least 1/3 of the member households should have access to funds from an internal subsidy pool to reduce their housing charges</li> </ul>
<ul style="list-style-type: none"> <li>• ability to age in place</li> </ul>	<ul style="list-style-type: none"> <li>• the co-op should have at least 20%of the units that are wheel chair accessible</li> <li>• any community facilities that are developed should be wheel chair accessible</li> </ul>
<ul style="list-style-type: none"> <li>• community connectedness</li> </ul>	<ul style="list-style-type: none"> <li>• the co-op should have a community facility that</li> <li>• accommodates 75 people in a multipurpose setting</li> <li>• has kitchen and washroom facilities</li> <li>• has a space for an office/administrative activities</li> <li>• the co-op is home to multi-generational households</li> <li>• Shop (craft shop)</li> <li>• guest room (to be discussed)</li> <li>• shared bike lock up</li> </ul>

<b>Value</b>	<b>Values into Action</b>
<ul style="list-style-type: none"> <li>• family friendly</li> </ul>	<ul style="list-style-type: none"> <li>• 55 % of the households have school aged children</li> <li>• 20% retired who can age in place</li> <li>• 25% other household types</li> <li>• both indoor and outdoor play space is provided for children</li> </ul>

**REJUVENATING THE EXISTING BUILDINGS AND ADDING NEW HOMES**

**REJUVENATION**

The Committee and the Consultant Team examined three options:

- status quo:
  - fix and repair as needed based on the Building Condition Assessment
- integrated repair and replace:
  - maintain existing buildings but enhance walls and windows (durability and energy performance)
- re-envision and redevelop
  - enhance the overall energy efficiency and functionality (Deep Energy Retrofit) of the existing buildings, add new units to allow the residents to “age in place”, and add community facilities

**What is a Deep Energy Retrofit and How Would it be Applied at Sunnyhill**

A Deep Energy Retrofit (DER) involves the modification of a building enclosure and other building systems to result in a high performance building, providing benefits to building durability, comfort, and indoor air quality.

The proposed DER will address Sunnyhill’s building issues by creating an envelope with air-tightness rated at ~0.5 air changes per hour (ACH). Our consultant estimates that the Co-op’s buildings currently have an ACH of 8. To put these ratings in context, an ACH rating of 8 indicates that the quantity of small holes and cracks in the envelope, if all collected together in one place, would amount to a hole large enough for a Saint Bernard dog to walk through; a very “leaky” building typical of the building standards of the day. An ACH of 0.5 on the other hand, would similarly result in a hole only large enough for a baseball to fit through.

Further, the DER will enhance insulation values, from the current nominal R12 (effective R9) to a range between effective R35 to R55 (depending on which option of the optimized modeling analysis the Co-op elects to undertake). The DER approach, developed by Canadian sustainable housing pioneers Rob Dumont and Harold Orr, (these sustainability pioneers were leaders on the Saskatchewan Conservation House in the late 1970’s and were

involved in the invention of the residential HRV and blower door tests; their work influenced and informed the Passive House and Net Zero movements.) is designed to achieve an energy performance level comparable to that of a Passive House design.

The DER is expected to deliver a reduction in energy use of 80% or greater over that expected of a conventionally constructed building at the time Sunnyhill was built. Deep Energy Retrofits accomplish converting older buildings into high performance ones using a strategy of re-cladding the exterior of the building — typically walls, foundations and roofs — with a new continuous moisture/air barrier. This barrier dramatically reduces air leakage rates. It also addresses issues arising from moisture intrusion into the insulation layer via warm moist air carried through “porous” vapour barriers. (The following link to a YouTube video illustrates the DER process (<https://www.youtube.com/watch?v=Fp3pmhxlfbU>).

The DER typically includes the addition of Heat Recovery Ventilators to ensure healthy indoor air quality (IAQ) once the air leakage rate of the building is lowered to around 0.5 ACH. With these performance expectations, the DER is expected to reduce the energy demands to such an extent that complexes like Sunnyhill can cost-effectively replace gas-based appliances (furnaces and DHW tanks) with electric alternatives, thus not only eliminating a reliance on natural gas, a greenhouse gas producing energy source, but permitting the entire housing community to switch to 100% renewable energy providers for its electricity, thus turning the complex into an effective net-zero project.

The following three different DER scenarios were analyzed and priced.

Existing Buildings (Baseline)	Retrofit (Scenario 1)	Retrofit (Scenario 2)	Retrofit (Scenario 3)
uninsulated slab	2" insulation on top of slab	2" insulation on top of slab	2" insulation on top of slab
2x4 = R9 walls	7" Roxul + 2x4 walls = R38	9" Roxul + 2x4 walls = R46	11" Roxul + 2x4 walls = R54
2x4 = R9 sloped roof	2x6" rafters (new) 9" TJI + 2x4" rafters = R62	2x6" rafters (new) 12" TJI + 2x4" rafters = R68	2x6" rafters (new) 14" TJI + 2x4" rafters = R74
aluminum slider windows (R1)	R9 cog, 0.3 SHGC triple windows	R9 cog, 0.3 SHGC triple windows	R9 cog, 0.3 SHGC triple windows
8.0 ACH	0.5 ACH	0.5 ACH	0.5 ACH

Source: Stuart Fix, [ReNu Building Science Inc.](#)

Stuart Fix from ReNu Building Science Inc did the modeling and analysis and David Butterwick from Butterwick Construction & Carpentry provided the construction cost estimates. As illustrated in the following table, the annual energy savings would range from \$96,000 to \$99,000. A copy of the full report is included in Appendix A.

Table 1: Summary of the estimated performance available through the four building envelope retrofit options described above. D.E.R = Deep Energy Retrofit. Assumes \$6/GJ natural gas + service fee costs (no inflation or escalation factors).

Sunnyhill Co-op Deep Energy Retrofit Options							
Scenario	Heating Load	Heating Demand	Annual Op Cost Gas	Annual Saving	Retrofit Capital Cost	Capital Premium	Retrofit Simple Payback
Baseline	930 kW	2484390 kWh	\$ 126,165	\$ -	\$ 5,076,427	\$ -	-
D.E.R - 1	341 kW	592299 kWh	\$ 30,079	\$ 96,086	\$ 6,183,168	\$ 1,106,741	11.5 years
D.E.R - 2	331 kW	556314 kWh	\$ 28,251	\$ 97,913	\$ 6,254,522	\$ 1,178,095	12.0 years
D.E.R - 3	320 kW	537697 kWh	\$ 27,306	\$ 98,859	\$ 6,291,195	\$ 1,214,768	12.3 years

Source: ReNu Building Science September 30<sup>th</sup> 2016.

### Financing the Renovation Work

Sunnyhill submitted an application for funding under the CMHC Reno-Retro Program to undertake the level 1 D.E.R on 58 of the 66 townhomes. In this scenario, the remaining 8 townhomes are removed and replaced with an apartment complex containing accessible units. The following is the construction budget for the DER work, which is estimated to be just over \$6.3 million.

#### Sunnyhill Construction Budget (Hard Cost Only)

Roof	\$153,107
Walls	\$1,741,985
Balconies	\$345,600
Floors	\$243,290
Windows	\$780,818
General conditions	\$2,568,400
Management Fee	\$233,302
Contingency	\$116,666
Total contractor cost	\$6,183,168
Less 8 units not be renovated	-\$399,129
Adjusted total	\$5,784,039
Mechanical room conversion to electric & half bath	\$580,000
Total construction costs	\$6,364,039

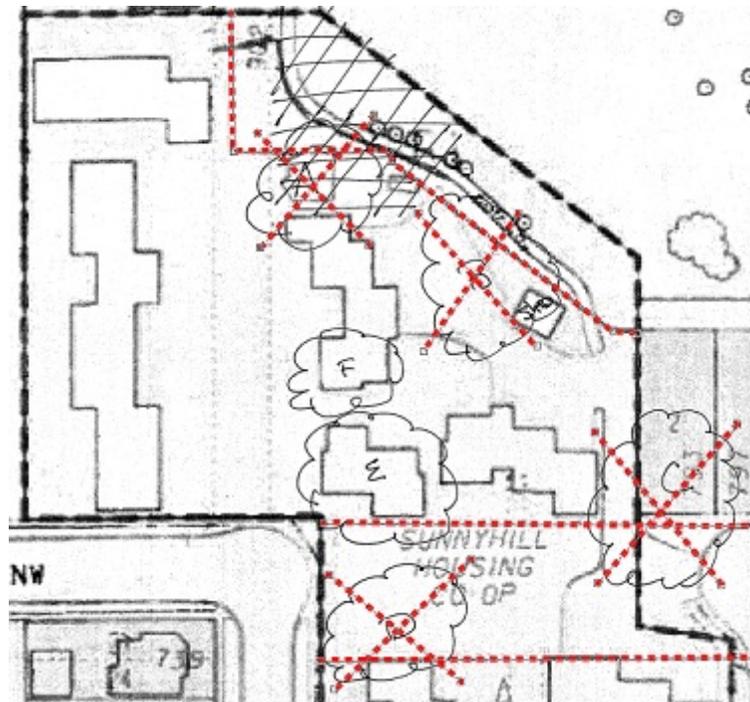
In addition to the construction costs, there are soft costs that must be added, bringing the total budget for the renovation to just over \$6.5 million. This budget includes the conversion from gas to electric heat source and transforming the current mechanical room into a half bath.

Sunnyhill DER Budget	
Construction less mechanical	\$5,784,039
Legal fees & registration	\$25,000
Project management	\$79,500
Building permit	\$76,032
Contingency (soft cost)	\$50,000
Sub-total (non-construction costs)	\$230,532
Total Budget less mechanical	\$6,014,571
Mechanical units	\$580,000
Total Cost	\$6,594,571

Note that the total cost of \$6,594,571 for the DER of 58 units is at variance with the estimated cost of \$6,787,241 that Sunnyhill used in its submission to CMHC for Reno/Retro Grant funding. The variance stems from two factors. This report's projected cost did not include GST as a cost, as many housing co-operatives are GST exempt, while the CMHC application assumed a GST component of \$323,202.00. In addition, the total cost of \$6,594,571 includes \$230,532 for management and other fees, permits, and a contingency while the application allowed \$100,000 for professional/legal fees. Thus, including GST and an allowance of \$100,000 for additional legal and professional fees, the total cost was estimated to be \$6,787,241 in the CMHC application. Sunnyhill applied for \$5,552,241. under the CMHC Program and will contribute the balance of \$1,235,000. itself. The difference of \$192,670 will need to be addressed in the future but for the purposes of this report, we have used the total cost of the DER retrofit of 58 unit to be \$6,594,571.

### ADDING NEW HOMES

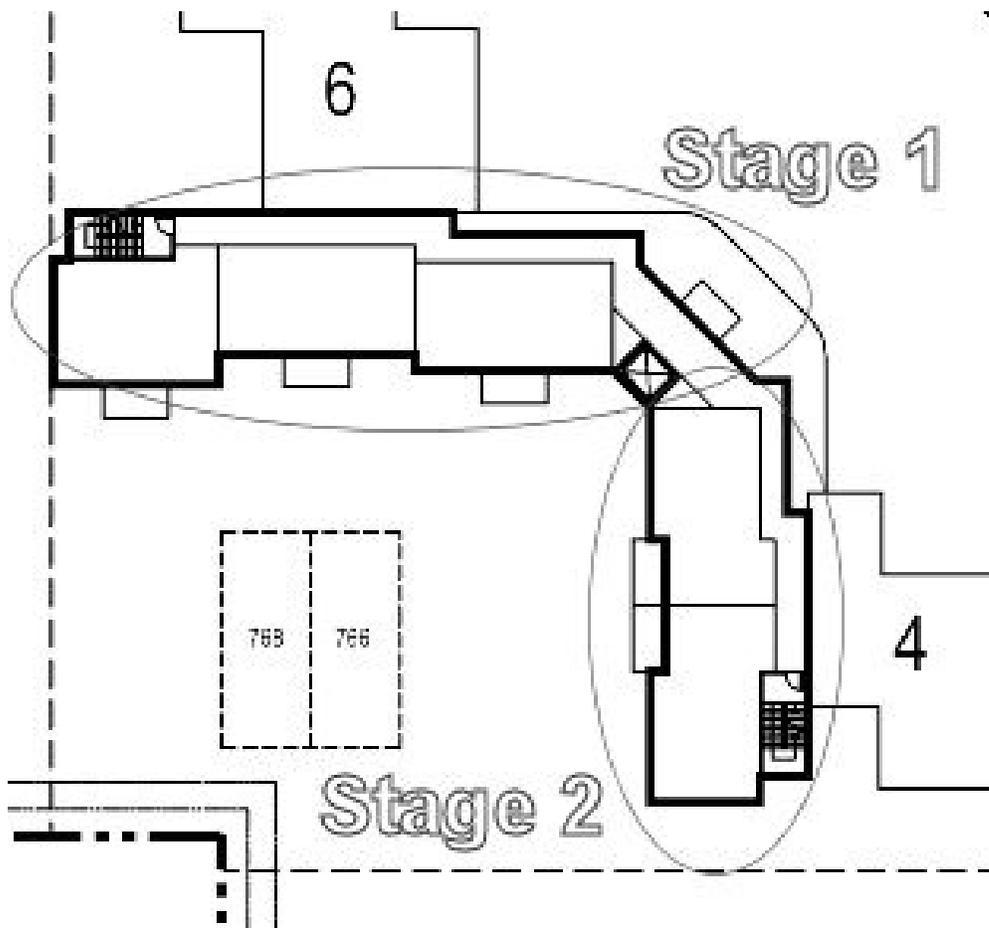
A number of locations were reviewed to determine the potential for adding more units (seen as options A - F in the site plan below). Through a process of elimination the Design Team determined that the only suitable areas were E & F which currently houses eight one bedroom units.



An apartment built into this area would allow for:

- minimum 11 more units (potentially 19 or more new units replacing 8 one bedrooms)
- a combination of ground oriented and upper floor units
- elevated barrier free access to all spaces (depending on design selected)
- a common social/meeting space (business meetings and social events)
- an office space
- an opportunity to explore options including: guest suites, craft/hobby rooms, library, kids room

This site, which is not in the flood plain, can be developed in stages which will mitigate the impact of member relocation and disruption. Following is a preliminary site plan showing how the apartment could be built in stages, with the first stage including the units which face South and the elevator and stairs.



The following elevation provides a conceptual view of the form and massing of the new development.



SUNNYHILL HOUSING COOP

ELEVATION STUDY



## Financing the New Homes

Two options were looked at, one that contains 19 suites with 2,400 square feet of community space and the other that contains 20 suites with 1,800 square feet of community space. In both options, each building is assumed to contain 3,100 square feet of circulation space and 1,000 square feet of space for mechanical and electrical rooms.

The construction cost was based upon information provided in the Cuthbert Smith Group Construction Cost Guide 2016. According to the Cost Guide, the construction cost of a medium quality low rise apartment is \$139.00 per square foot. For the purpose of this financial modeling, a construction cost of \$160.00 per square foot was used. Following are the capital costs and a break out of the financing and operating cost for each of these scenarios.

The new development will be financed through mortgage financing, which will come from three sources:

1. through the refinancing of the existing 66 suites under the CMHC refinancing programs, which funds will be allocated to pay down the existing CMHC mortgage, the reno/retro costs and a portion of the cost of the new building. The repayment of these will be allocated to the existing units and the new units. (Mortgage 1 in following tables)
2. a separate mortgage will be secured to cover the balance of the cost of the new construction (Mortgage 2 in following tables)
3. the community facilities has been shown as a separate mortgage but could be included as part of the mortgage for the new units. (Mortgage 3 in following tables)

## 19 Suite Scenario

### Capital Costs

	Apartment & Community	
	Issue Date	November 14 2016
	Number of Units	19
	Construction Time (months)	15
	Total Square Feet	20000
	Short Term Interest Rate	3.500%
Category	Budget Item	
Acquisition		
	Land	\$0
	Legal Service Fees	\$10,000
	Title & Recording Fees, Survey	\$4,750
	Development Permit	\$2,014
	Sub-total	\$16,764
Soft Costs		
	Interest Construction	\$43,750
	Building Permit	\$25,420
	Liability Insurance During Const.	\$10,000
	Architect/consultant Fees	\$302,500
	Project Management & Co-ordination Fees	\$208,435
	Legal Charges	\$5,000
	Quantity Surveyor	\$20,000
	Lenders Fees	\$10,000
	Accounting Fees	\$10,000
	Appraisals & Testing, Studies	\$17,750
	Soft Cost Contingency	\$38,000
	Sub-total	\$690,855
Building		
	Residential Construction Cost	\$3,250,000
	Appliances	\$95,000
	Total Costs (Excl Contingency)	\$4,052,619
	Contingency (5% of Construction)	\$162,500
	Total Costs	\$4,215,119
	Total Including GST	\$4,366,863

<b>19 Unit Scenario</b>				Monthly per
<b>New Mortgage 1</b>	\$3,925,000	% of total	Monthly	Unit
CMHC Payout (to townhomes)	\$1,900,000	48%	\$10,305	\$178
Reno retro (to townhomes)	\$1,025,000	26%	\$5,559	\$96
New construction (to apartment)	\$1,000,000	25%	\$5,424	\$285
			\$21,288	
<b>New Mortgage 2</b> (apartment)	\$2,983,819			
<b>New Mortgage 3</b> (all units)	\$473,044			

**Monthly Mortgage Payment Distribution**

	Townhomes	Apartment	
Mortgage 1	\$274	\$285	Retro Refinance
Mortgage 2		\$881	Residential Construction
Mortgage 3	\$36	\$36	Community Facilities

Operating Costs:

The direction from the Planning and Development Committee was to set the housing charges for the new units at the same rate as the existing housing charges. The following table provides an overview of the operating proforma. In this proforma, there is an operating deficit even after applying all the potential D.E.R gas savings. This deficit is a result of the fact that the housing charges for the new units set at the same rate as the existing housing charges and are not adequate to cover the operating costs including debt servicing. In order to cover this deficit, the housing charges for all units would have to be increased by \$20.00 per month to break even.

## Revenue & Expenses: 19 Units

### REVENUE

Number of Units	Bedrooms	Townhomes	Apartment	Combined	Total
25	2	\$878		\$263,400	
33	3	\$1,010		\$399,960	
13	1		\$687	\$107,172	
6	2		\$878	\$63,216	
77				\$833,748	\$833,748

### EXPENSES

Mortgage 1		\$190,368	\$65,083	\$255,452	
Mortgage 2			\$200,945	\$200,945	
Mortgage 3		\$24,743	\$8,105	\$32,848	
Total Debt Service				\$489,245	\$489,245
Taxes		\$64,767	\$26,960	\$91,727	
Insurance		\$23,727	\$11,400	\$35,127	
Common power		\$3,480	\$1,140	\$4,620	
Water & Sewage		\$34,800	\$11,400	\$46,200	
Garbage removal		\$2,900	\$950	\$3,850	
Recycling		\$3,480	\$1,140	\$4,620	
Sub total operating				\$186,144	\$186,144
Maintenance		\$79,407	\$5,700	\$85,107	\$85,107
Grounds		\$54,485	\$7,515	\$62,000	\$62,000
Administration		\$110,727	\$15,273	\$126,000	\$126,000
Total Expenses					\$948,497
Surplus or Deficit					-\$114,749
Annual Gas					\$96,086
Savings					
Applied to Overall Budget					\$96,086
Deficit					-\$18,663
Deficit Per Unit Per Month					-\$20

## 20 Suite Scenario

### Capital Costs:

	Apartment & Community	
	Issue Date	November 14 2016
	Number of Units	20
	Construction Time (months)	15
	Total Square Feet	20000
	Short Term Interest Rate	3.500%
Category	Budget Item	
Acquisition		
	Land	\$0
	Legal Service Fees	\$10,000
	Title & Recording Fees, Survey	\$5,000
	Development Permit	\$2,014
	Sub-total	\$17,014
Soft Costs		
	Interest Construction	\$43,750
	Building Permit	\$25,420
	Municipal Improvement Requirements	\$0
	Taxes During Const.	\$0
	Liability Insurance During Const.	\$10,000
	Architect/consultant Fees	\$302,500
	Project Management & Co-ordination Fees	\$208,435
	Legal Charges	\$5,000
	Quantity Surveyor	\$20,000
	Lenders Fees	\$10,000
	Accounting Fees	\$10,000
	Appraisals & Testing, Studies	\$17,750
	Soft Cost Contingency	\$40,000
	Sub-total	\$692,855
Building		
	Residential	\$3,250,000
	Sub-total Construction	\$3,250,000
	Appliances	\$100,000
	Total Costs (Excl Contingency)	\$4,059,869
	Contingency (5% of Construction)	\$162,500
	Total Costs	\$4,222,369
	Total Including GST	\$4,374,374

Financing the New Units

<b>20 Unit Scenario</b>		% of Total	\$21,288	Monthly per
<b>New Mortgage 1</b>	\$3,925,000			Unit
CMHC Payout (to townhomes)	\$1,900,000	48%	\$10,305	\$178
Reno retro (to townhomes)	\$1,025,000	26%	\$5,559	\$96
New construction (to apartment)	\$1,000,000	25%	\$5,424	\$271
			\$21,288	
<b>New Mortgage 2</b>	\$3,001,506			
<b>New Mortgage 3</b>	\$372,868			

**Monthly Mortgage Payment  
Distribution Option 20 Units**

	Townhomes	Apartment	
Mortgage 1	\$274	\$271	Retro Refinance
Mortgage 2		\$868	Residential Construction
Mortgage 3	\$28	\$28	Community Facilities

Operating Costs:

The following table provides an overview of the operating proforma for 20 units. In this proforma, there is an operating deficit even after applying all the potential D.E.R gas savings. In order to cover this deficit all the housing charges would have to be increased by \$14.00 per month to break even.

## Revenue & Expenses 20 Units

### REVENUE

Number of Units	Bedrooms	Townhomes	Apartment	Combined	Total
	25	2	\$878	\$263,400	
	33	3	\$1,010	\$399,960	
	14	1	\$687	\$115,416	
	6	2	\$878	\$63,216	
	78			\$841,992	\$841,992

### EXPENSES

Mortgage 1		\$190,368	\$65,083	\$255,452	
Mortgage 2			\$208,423	\$208,423	
Mortgage 3		\$19,503	\$6,639	\$26,142	
Total Debt Service				\$490,017	\$490,017
Taxes		\$64,767	\$27,007	\$91,773	
Insurance		\$23,727	\$12,000	\$35,727	
Common power		\$3,480	\$1,200	\$4,680	
Water & Sewage		\$34,800	\$12,000	\$46,800	
Garbage removal		\$2,900	\$1,000	\$3,900	
Recycling		\$3,480	\$1,200	\$4,680	
Sub total operating				\$187,560	\$187,560
Maintenance		\$79,407	\$6,000	\$85,407	\$85,407
Grounds		\$54,485	\$7,515	\$62,000	\$62,000
Administration		\$110,727	\$15,273	\$126,000	\$126,000
Total Expenses					\$950,984
Surplus or Deficit					-\$108,992
Annual Gas Savings					\$96,086
Savings Applied to Overall Budget					\$96,086
Surplus or Deficit					-\$12,906
Per Unit Per month					-\$14

## CONCLUSION

The initial analysis indicates that it is both physically and economically possible for Sunnyhill to undertake a D.E.R renovation of its existing buildings and add a building that would provide up to 20 suites for residents to “age in place” and contain community facilities for all of the units.

It should be noted that the report’s Operating Cost analysis is predicated on the Co-op continuing with natural gas as an energy source and uses the projected savings of \$96,086 in its analysis. If the Co-op opted to convert to 100% electricity for all of its energy needs, the savings from utility costs alone would be reduced as shown in the table below.

Op Cost Gas (current)	\$126,165	
Scen	Op Cost Elec	Net Savings
DER #1	\$75,611	\$50,554
DER #2	\$71,017	\$55,148
DER #3	\$68,640	\$57,525

The reduction of the utility savings (using the DER 1 projections) from \$96,086 to \$50,554 will result in an operating deficit increase from \$14 to \$62 per unit per month. However, this deficit does not take into account a number of other savings which would arise from the elimination of ongoing maintenance costs associated with the natural gas equipment and the substantial reduction in replacement reserve allocation for the all electric equipment, nor the elimination of the delivery charges (both fixed and variable) on the gas bill. This exclusion is only because this calculation was beyond the scope of the contract. The maintenance costs of the all electric system is negligible if not zero (electric parts work until they break and are then simply replaced) and the replacement cost (and therefore reserve allocation) is also commensurately much lower (approximately 90%) as both the labour and material costs are lower. In addition to the potential to be GHG free, converting to an all electric system is also future proofing the project against significant cost increases in natural gas due to carbon tax and other similar market forces designed to address the climate file.

In moving ahead there are a number of issues that will need to be addressed including:

- the lack of long term land security with the current land lease
- the City’s parking requirements. While the zoning would allow for up to 96 units there may be issues with regard to parking. The financial analysis in this report included adding 10 surface parking stalls on site, which may not be possible. Not having the stalls will not impact the financial viability of the development.
- the current housing charge structure may not result in a high enough appraised value to secure an adequate mortgage to cover the cost of developing the new building (total cost less the \$1 million “equity”)
- how to integrate the new units and residents into the existing cooperative community

- determining how much GST the Cooperative may have to pay
- confirming the economic impact of converting to 100% electric heat and hot water, including the anticipated savings from:
  - elimination of natural gas service fees
  - elimination of annual maintenance and replacement reserve contributions associated with the furnaces and hot water tanks