

MESF Project Application Grid Tied – Solar PV Pilot

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EIC - Dec-4-08**



Pilot Project Summary

- Implementation of a 10 kW grid-tied solar PV system at the Civic Centre or other Town owned building to showcase Markham's leadership role in conservation and our commitment to renewable energy
- Eligible for \$0.42/kWh incentive under Standard Offer Program that would provide approximately \$5000/year in revenue
- Tremendous education and awareness raising opportunity that will be promoted through web-enabled live data feeds on energy generation and carbon displacement

Funding Sources

- \$100K requested from MESF
- Pursuing external funding opportunities:
 - Municipal Eco-Challenge Fund - will pay up to 50% of the cost of a showcase project – application deadline February 6, 2009
 - FCM may have \$ for but unknown until January 2009

OPA's Standard Offer Program

- Intent is to help Ontario meet its renewable energy supply targets by providing a standard pricing regime and simplified eligibility, contracting and other rules for small renewable energy projects
- Solar PV generators will be paid \$0.42/kWh over the 20 year contract term
- Province has discussed increasing incentive levels but details unknown at this time
- Environmental attributes such as carbon credits generated will initially go to the OPA but after 20 years, any credits generated will stay with the Town

Triple Bottom Line Benefits

- **Economic**

- Solar energy is FREE
- Low maintenance costs associated with solar energy generation
- Revenue generating opportunity through SOP (approximately \$5000/year)
- Incentives from other sources being pursued (MECF, FCM)

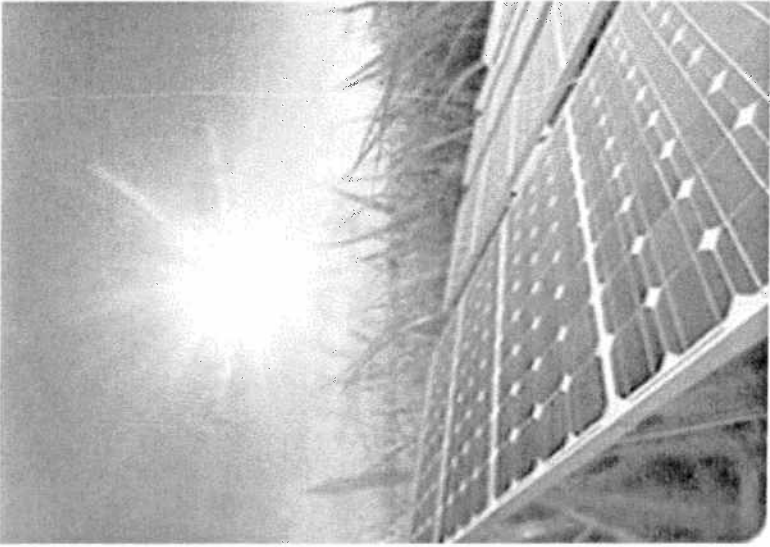
- **Environmental**

- Solar energy is plentiful and renewable
- Doesn't interfere with the natural environment
- Decreases the amount of air pollution
- Emits no CO₂ – thereby reducing GHGs and ultimately our carbon footprint (over 20 years – 157 tonnes of CO₂ reduced, 29 passenger vehicles removed from the road for a year, 20 homes powered for a year)
- Depending on design of installation, may provide shade coverage thereby reducing cooling load during the summer months

Triple Bottom Line Benefits

- Social

- Solar energy provides quiet, clean power
- Contributes to local energy self reliance
- Represents opportunity to contribute to a more integrated urban energy system (multiple energy sources – district energy, solar, geothermal, wind, etc.)
- Represents ideal opportunity for Town to showcase its commitment and leadership in the area of environment, conservation and renewable energy
- Compliments work being done in the community and interest in renewables as demonstrated by the York Region Solar Initiative (Thornhill project)
- Would serve as an education and awareness building opportunity with benefits to members of our community
- Provide experience with implementing a grid-tied renewable system that we could replicate elsewhere in the future
- Several Markham based companies in the 'solar business' – thereby contributing to job creation and security



Photovoltaic Systems

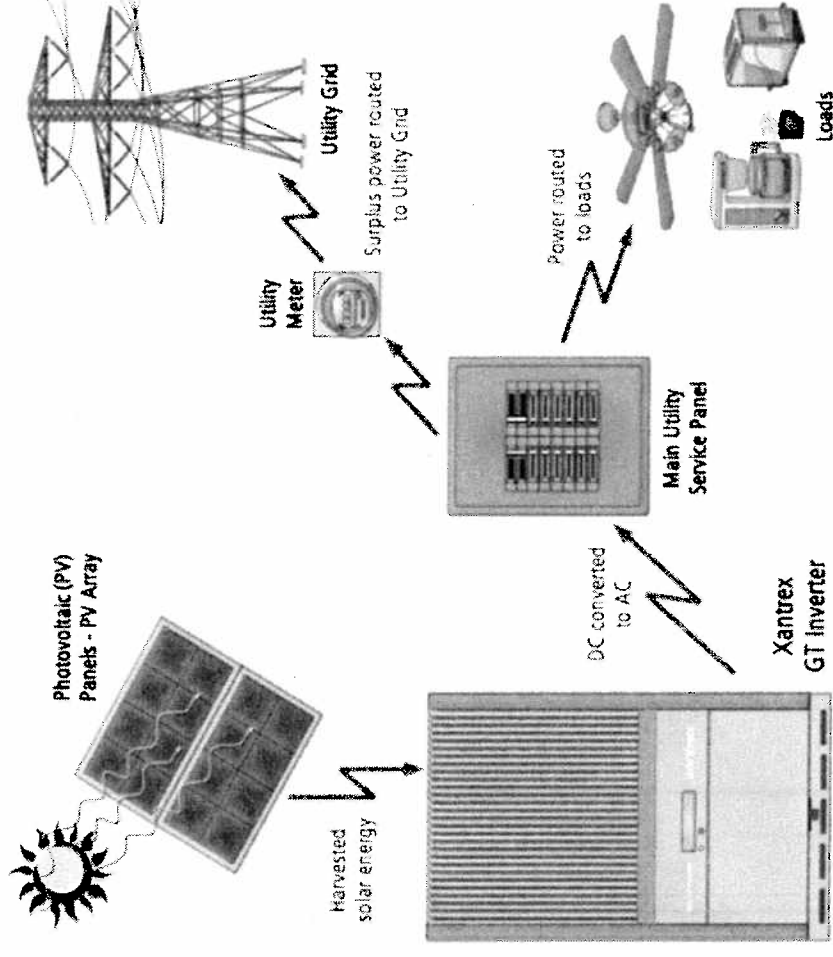
Presentation for
Town of Markham

Photovoltaics = Solar Electricity

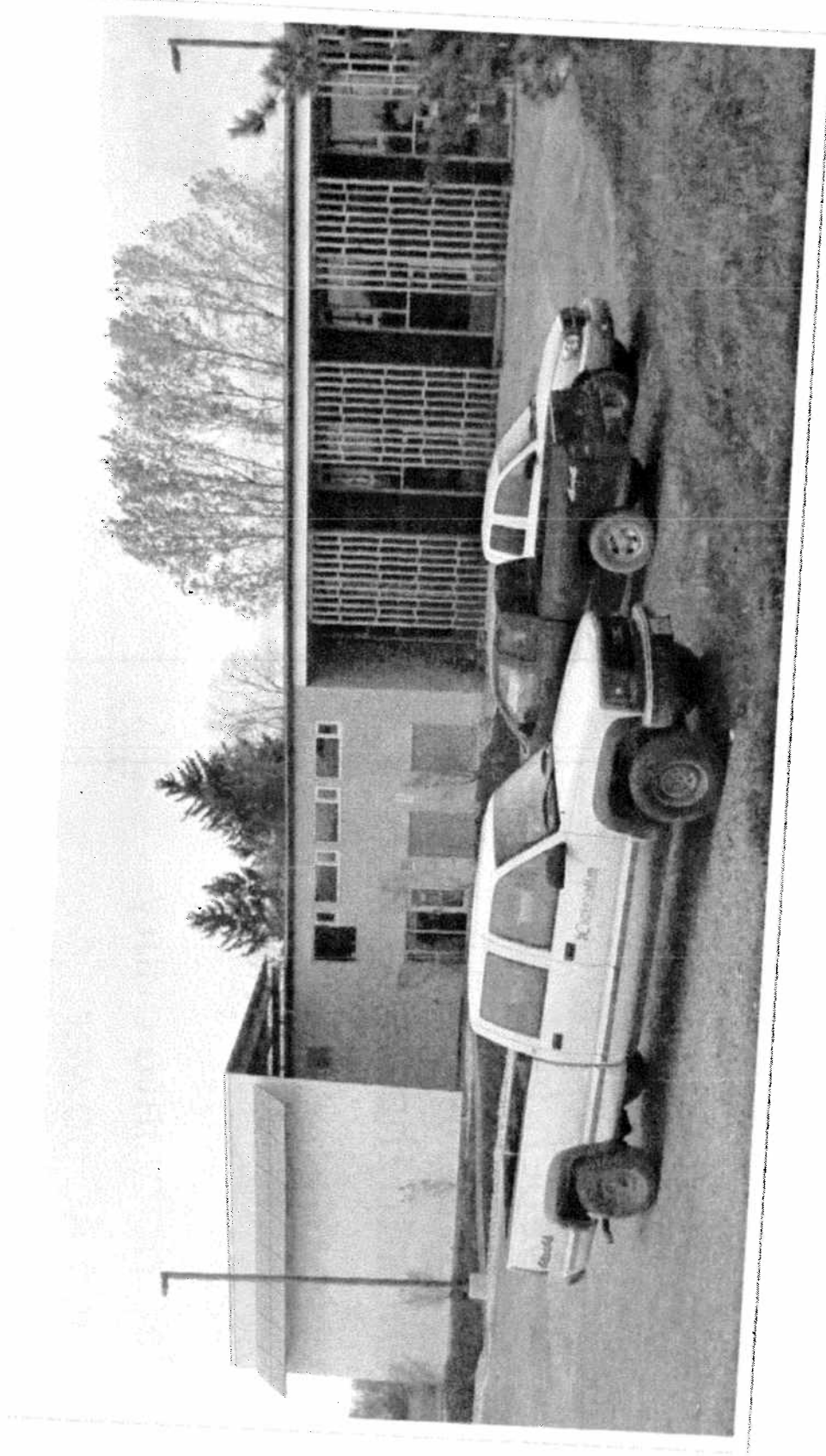
- Converting sunlight into electricity
- Short form: “PV”
- A safe, clean and reliable source
- Low maintenance requirements
- In commercial use for over 30 years
- Modular and scalable

Grid-Tied PV System

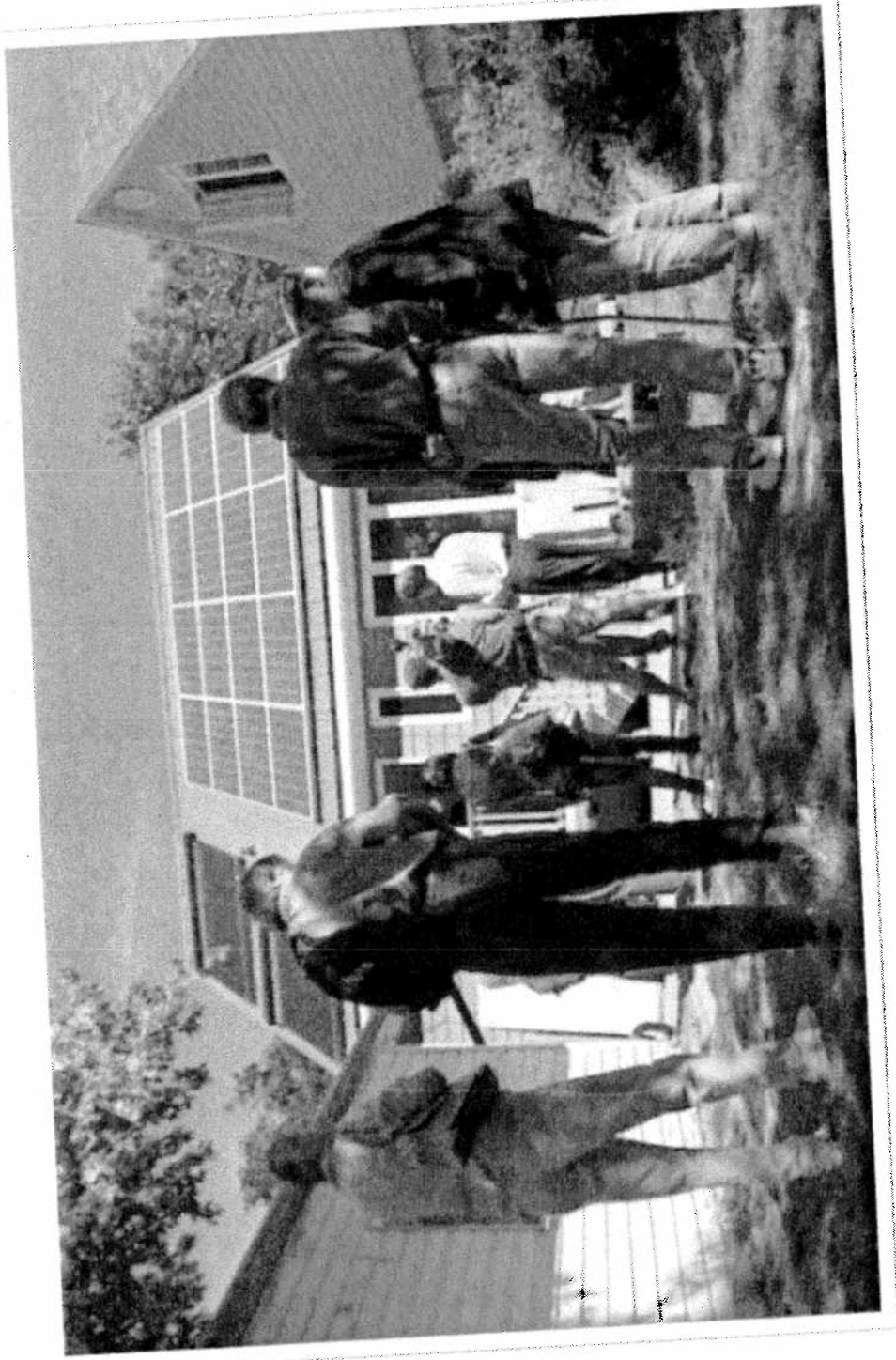
- Reduces electrical consumption from the power utility
- Grid Dependent – energy generated is sent into the ON grid
- No Batteries Needed
- Inverter converts DC electricity into utility-grade AC power.



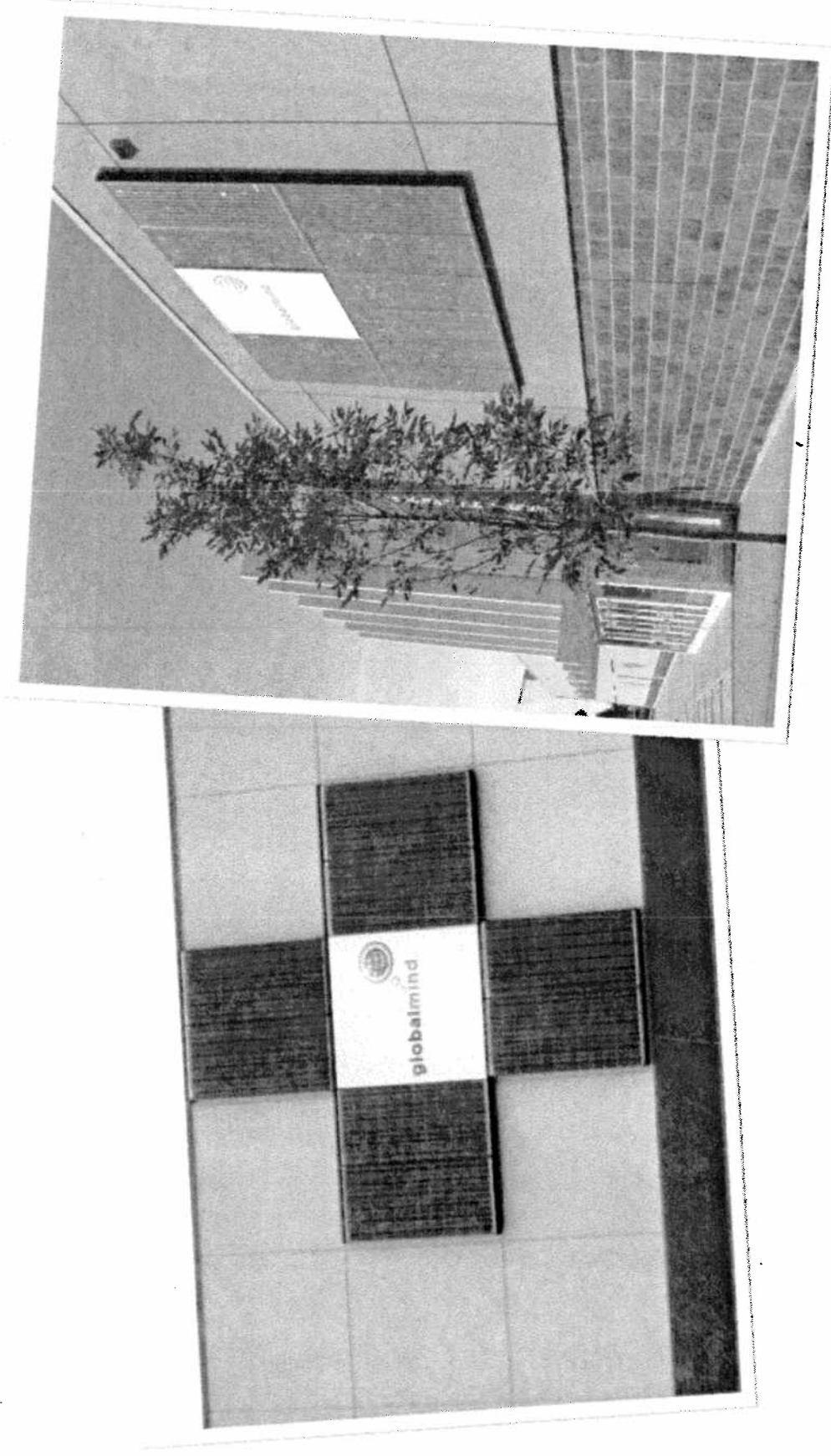
TRCA Restoration Services Centre | 2.56 kW PV



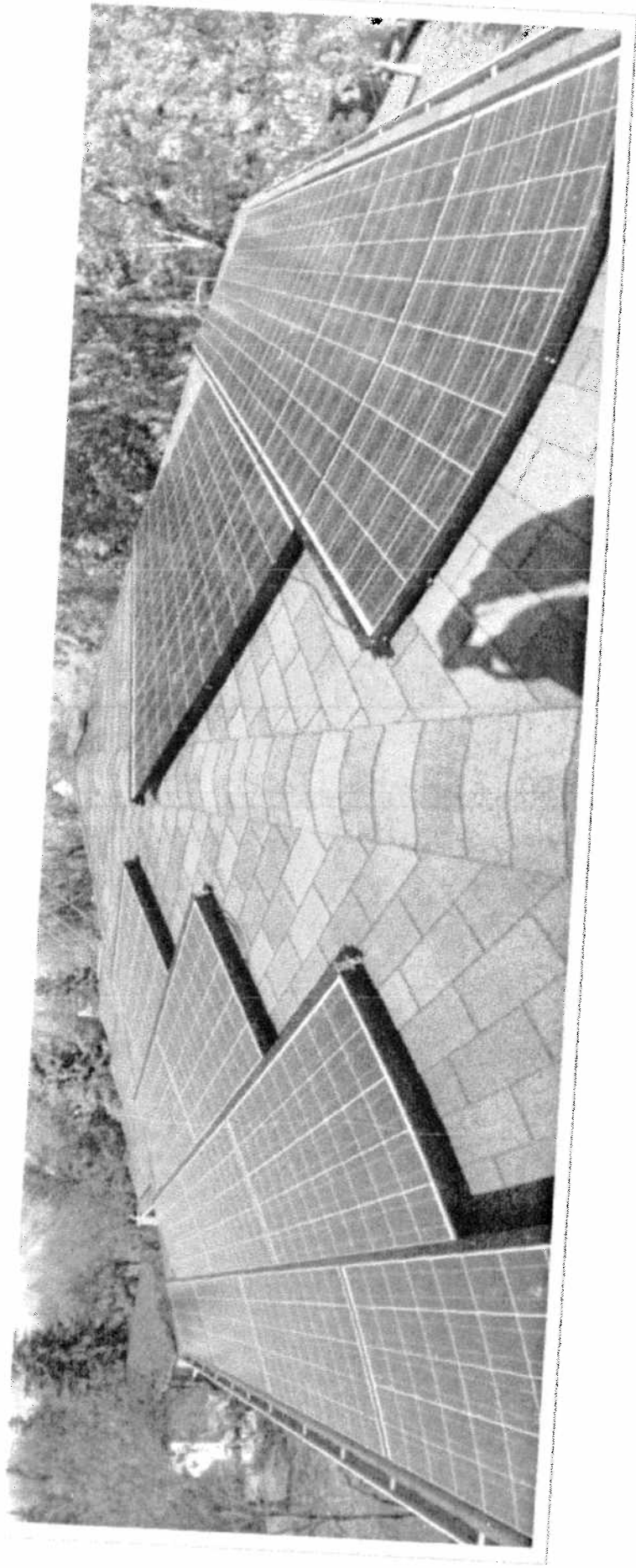
NOW House Project | 2.8 kW PV



Hbc Retail Stores: Zellers & The Bay | 1.4-1.75 kW



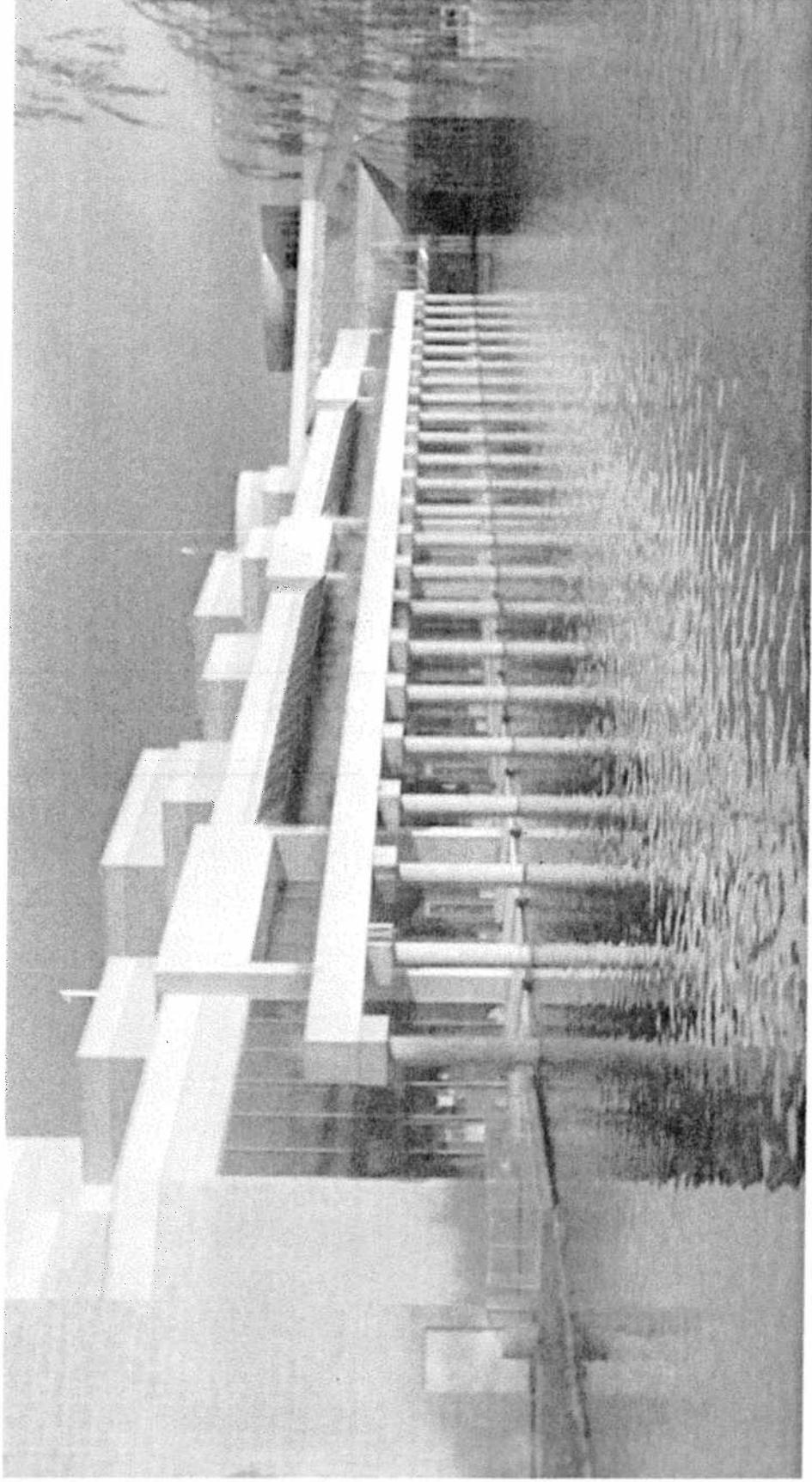
Ling Residence in Markham | 5.94 kW PV



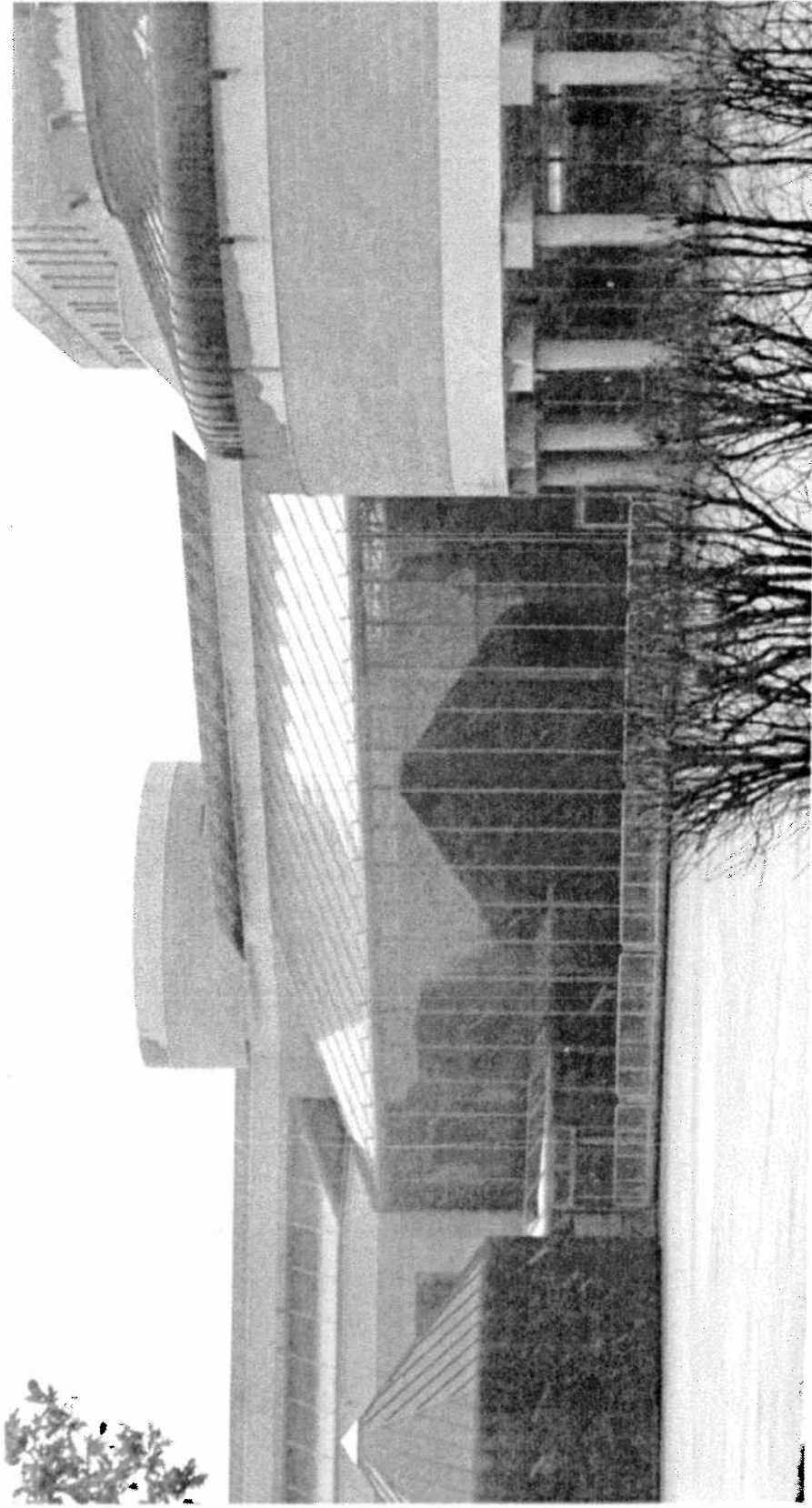
Options for Town of Markham

- 10 kW Grid-Tied PV generates 11,000 kWh/yr and costs approx. \$100,000
- Standard Offer Program would provide approximately \$5000/year in revenue for 20 years
- Can be broken down into smaller systems
- Flexible installation (facing south) but creativity may increase costs

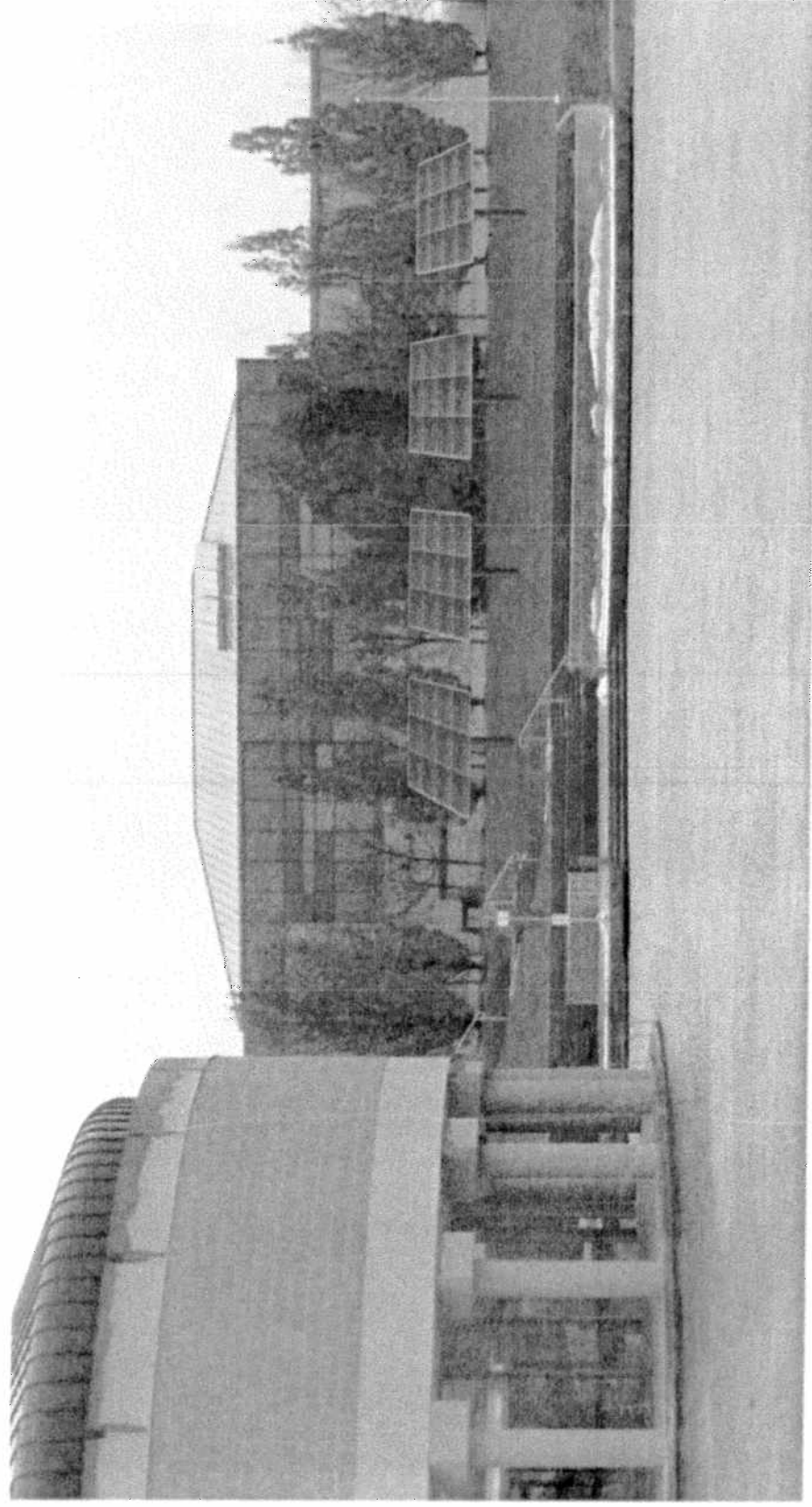
Concept 1 for Civic Centre | Solar 'Awnings'



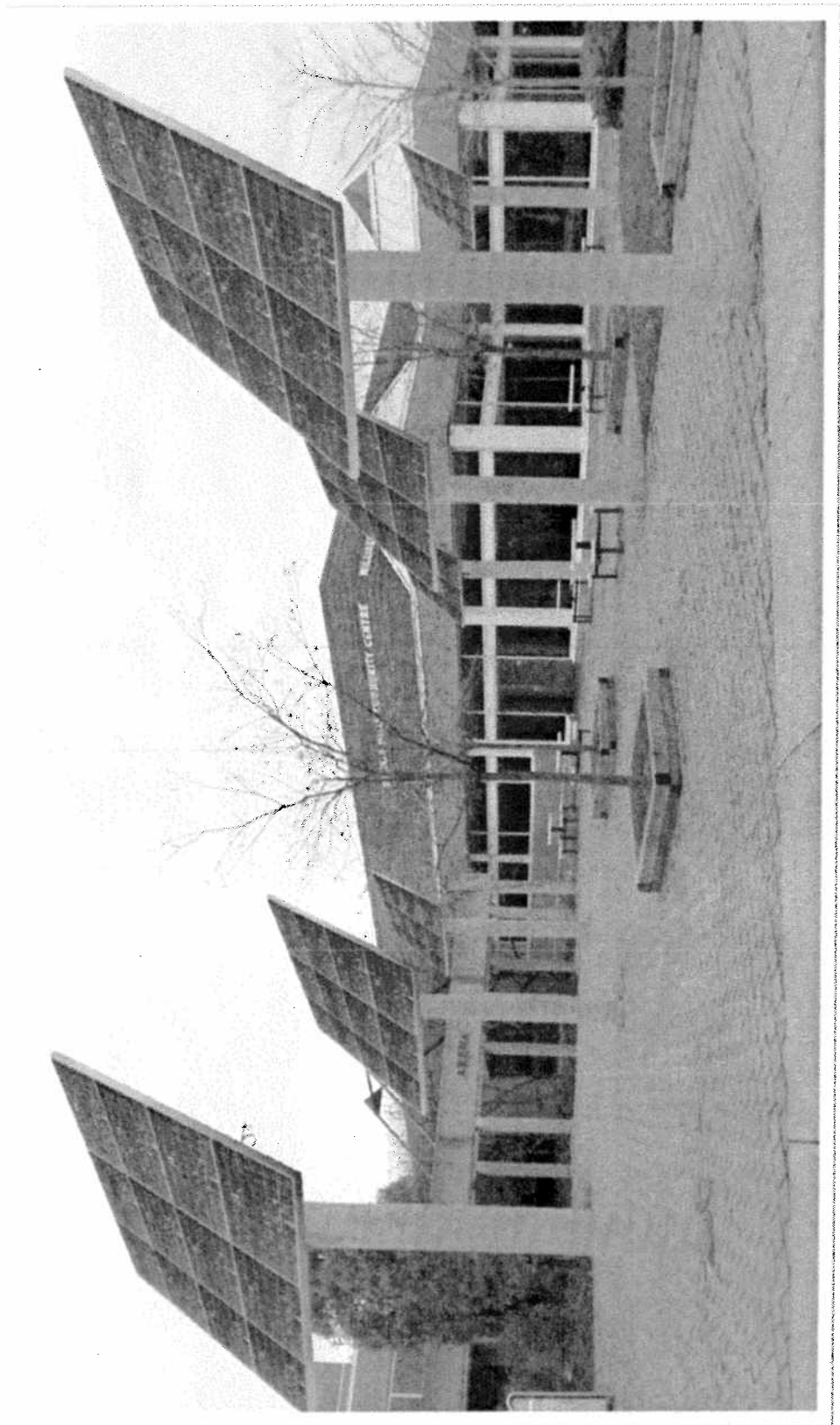
Concept 2 for Civic Centre | Flat Roof Solar



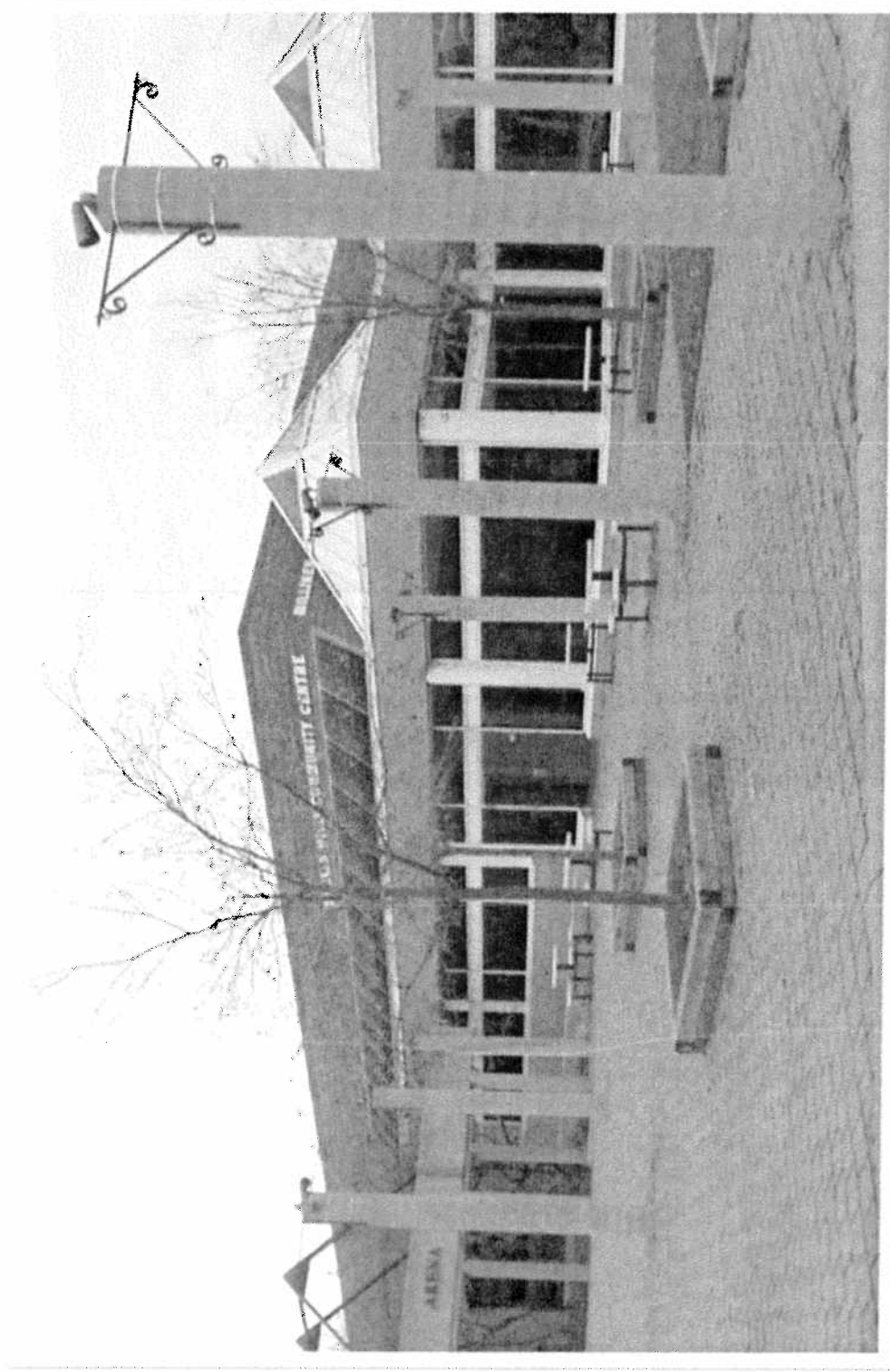
Concept 3 for Civic Centre | Solar 'Trees'



Concept 1 for Milliken Community Centre | Solar 'Trees'

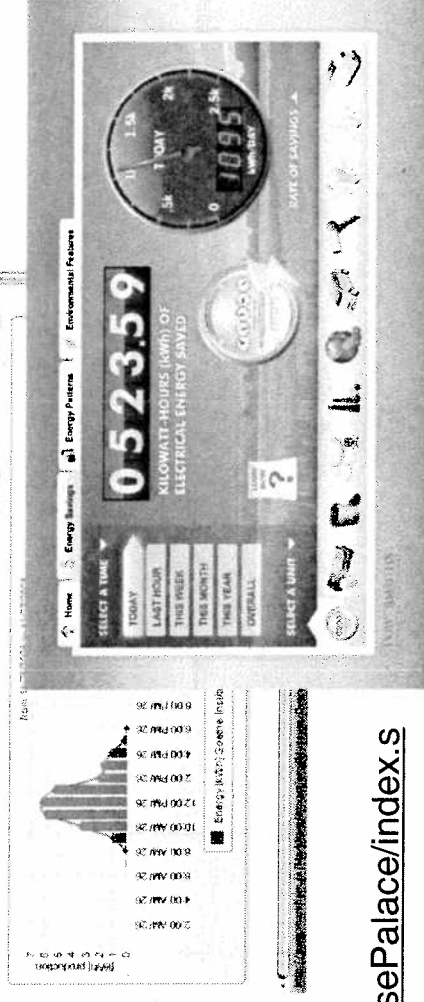
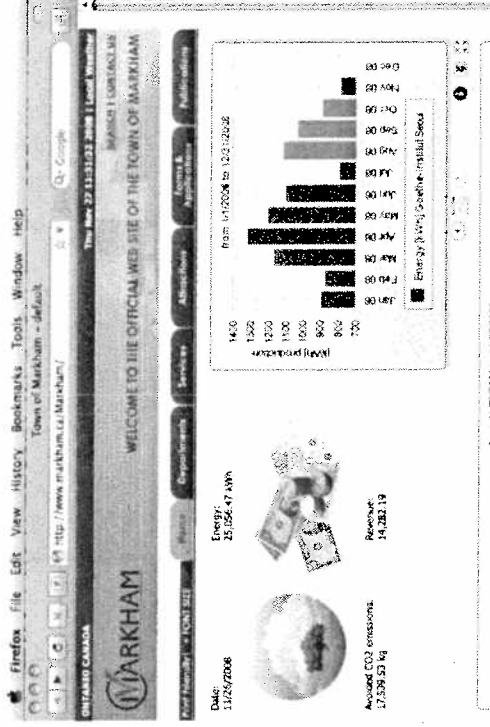


Concept 2 for Milliken Community Centre | Rooftop Solar



Data Display & Education

- Website
- Lobby Display
- Posters
- Weather Station
- Interactive
- Presentation



Example:
<http://view2.fatspaniel.net/FST/Portal/TorontoHorsePalace/index.wf>

Thank You

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