RESEARCH REPORT

THEORY TO PRACTICE: LESSONS LEARNED FROM THE USE OF PERFORMANCE ASSESSMENT MEASURES TO IMPLEMENT SUSTAINABLE COMMUNITIES

EXTERNAL RESEARCH PROGRAM

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THEORY TO PRACTICE:

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Final Report

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Mr. Peck also heads up the recently formed *Canadian Eco-Industrial Network* which provides a forum for the exchange of best practices between communities and also organizes workshops on implementing sustainable community economic development practices based on the principles of industrial ecology. In a volunteer capacity, Mr. Peck is the Chair and co-founder of Friends of the Don East, a local environmental group that has promoted sustainable community development in Toronto for the past nine years. He also worked as a volunteer for two years for the Toronto and Region Conservation Authority on the development of performance assessment measures for the Don River Watershed and serves on the board of the Economic Developers Council of Ontario. For more information please visit www.cardinalgroup.ca or, to contact Mr. Peck please e-mail speck@cardinalgroup.ca.

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Executive Summary

The notion of sustainable communities holds considerable promise for delivering multiple economic, social and environmental benefits to the highly urbanized citizenry of Canada. Sustainable community development however, is very different from standard development practices and its implementation holds new challenges. One very important approach to bridge the gap between theory and practice involves the use of performance assessment measures (PAMs) within the context of community sustainability and reporting initiatives. When quantitative targets are used in combination with indicators for the purposes of evaluating the effectiveness or efficiency of government or non-governmental actions, we refer to them as performance assessment measures (PAMs). Little work has been undertaken to evaluate local-level experience with PAMs in this context.

A community sustainability and reporting initiative involving PAMs usually has seven core elements:

- A set of policy goals or objectives (e.g., improve water conservation).
- A set of measurable indicators chosen to represent the policy goals or objectives (e.g., litres/person).
- A baseline set of data to describe current or historical conditions (e.g. 300 litres/person/day).
- A set of numerical targets representing a desired future state (e.g., 200 litres/person/day).
- A time-frame(s) for realizing the target (e.g., 250 litres/person/day in five years and 200 litres/person/day in 10 years).
- An action plan or series of steps that need to be implemented to achieve the target.
- A reporting framework (e.g., public status report every 3 years).

This project reviews some of the best efforts to date related to developing PAMs in order to move sustainable community development from the vision and goal setting stage into practice. The seven case studies are:

- Buffalo's State of the Region Report, NY
- Don Watershed, ON
- Civano, AZ
- Hamilton-Wentworth, ON
- Okotoks, AB
- Santa Monica, CA
- Southeast False Creek, BC

<u>Uses of Performance Assessment Measures</u>

The case studies revealed that both broad public and specific municipal operational benefits are derived from the establishment of PAMs. These many benefits make the effort to establish them worthwhile. Essentially, PAMs represent an invaluable tool for politicians, city managers and

citizens to develop a wide range of policies and programs that lead to the operationalization of sustainable community policies and visions. Some of the key uses for PAMs identified include:

- Political and staff education and awareness raising.
- Support for internal priority setting and budgeting processes.
- Program and policy review and revision.
- The identification and implementation of capital and operational cost savings.
- Developing operations, planning guidelines, and zoning bylaws.
- General public education regarding sustainable development.
- Key stakeholder education and awareness building and negotiations with developers.
- Partnership identification and development around commonly shared interests.
- Staff evaluation and performance incentive development.

Process for Developing PAMs

Designing performance assessment measures typically involves a combination of staff and expert research and analysis. This is required to establish an initial set of baseline data and PAMs, followed by public consultation. Community consultation techniques used include:

- Local workshops.
- Direct Participation on Task Forces/Committees
- Workbooks mailed to the broad community.
- Surveys distributed to households.
- Mail-outs in utility bills.
- Indirectly, through the media.

Methods of Target Setting

Numerous methods were used to establish specific targets for PAMs and include the following:

- The adoption of pre-existing targets from studies or policies completed by national, state, provincial, regional or local governments or related agencies.
- Conducting a literature review to identify appropriate benchmarks.
- Use of experts through special workshops, interviews and the use of consultants.
- Historical literature review to help establish baseline information.
- Telephone and mail-out surveys of public attitudes and values.
- Special workshops for key stakeholders.
- Cost-benefit and technical feasibility analysis.
- Political sensitivity analysis.
- In the absence of sufficient information, best professional judgment or ‘gut feel’.

Baseline Data, Reporting and Monitoring

A number of important insights were gained with respect to reporting and monitoring targets:

- A annual, three or five year reporting period is considered reasonable, but may vary by the PAM.
- The process for revising selected targets should include key stakeholders.
- Produce interim reports for selected PAMs when there is a more urgent need to track progress and make policy and program adjustments.
- Ensure that the monitoring of key targets is within the organization's jurisdiction.
- Adopt a reporting format that corresponds to the organization's key audiences.
- Develop a media relations or outreach strategy to help build public interest in the project and to communicate the results.

Options for Dealing with Possible Conflict over PAMs

Some conflict may arise when developing PAMs and it is important to have a strategy to make it constructive. The case studies revealed a number of options for addressing conflict constructively:

- Drop individual PAMs that are too controversial or delay their development.
- Abandon the notion of setting quantitative targets for certain controversial indicators and instead, adopt "directional targets", like "decreasing home energy consumption".
- Refer a controversial PAM to another agency for further development.
- Undertake to study the technical or economic feasibility of the PAM in question.
- Postpone adopting a quantitative target until further data or analysis becomes available and/or the next reporting period.
- Adopt an interim target with the proviso that it will be reviewed and appropriately revised at some future date.

Enhancing the Legitimacy of PAMs

The use of PAMs raises questions of legitimacy due to the fact that they may have a more direct influence on political and staff accountability and on the allocation of public resources than do indicators. Our case studies revealed a number of issues and techniques in helping to build the legitimacy of PAMs:

- Political and bureaucratic 'buy-in' should be sought in order to ensure better chances of implementation.
- Balance the ambitiousness of targets with a 'realistic' assessment of what can be achieved under local conditions and established timeframes.
- Incorporate the widest range of interests by choosing PAMs that match their needs, and the goals, objectives and vision of the sustainable community project.
- Ensure that both the general public and key experts and community leaders have a meaningful role in the process of developing the PAMs.

- ❖ Achieve the broadest consensus over targets, including both stakeholders and the public.
- ❖ Ensure that an adequate outreach and communication program is in place to 'sell' the program to the general public, gain support for policy and program changes and to address criticisms.
- ❖ Develop an accessible and technically defensible reporting framework.
- ❖ Avoid establishing contradictory or inconsistent targets and ensure that they reflect the indicators and broader goals and objectives of the sustainable community initiative.

Strengthening Implementation

Achieving a target involves linking the target to specific recommended actions or steps that indicate how the targets are going to be met, and by whom, in a given time period. The implementing agency can facilitate this objective by:

- ❖ Ensuring that those who will be responsible for implementing the program have 'bought into' the process and the targets (i.e., obtain official endorsement of the associated targets).
- ❖ Understanding the needs of key stakeholder groups and work to address their concerns during the implementation of the PAMs.
- ❖ Incorporating the objectives and targets into key municipal and regional documents.
- ❖ Removing regulatory barriers that would impede the implementation of the PAMs.
- ❖ Building flexibility into the design of the PAMs and remaining flexible during implementation.
- ❖ Using PAMs to guide and evaluate staff in annual performance reviews.

Conclusion

Initial efforts to use PAMs in support of community sustainability are very promising and suggest that quantified targets represent a key step in our ongoing efforts to define and implement sustainable community development practices. Despite the challenges and the potential for conflict, our research shows that these were outweighed by benefits such as clarifying community goals, establishing priorities, improving accountability, raising awareness and promoting concrete implementation. In fact, all of the participants in the case studies interviewed felt that establishing PAMs were well worth the effort. The establishment of PAMs are a much needed, logical next step in the efforts of Canadian community leaders to mobilize resources in order to move toward the implementation of more sustainable and livable communities.

Sommaire

La notion de collectivités durables soulève de grandes espérances quant aux multiples bienfaits économiques, sociaux et environnementaux qu'elle peut procurer à l'ensemble des habitants très urbanisés du Canada. Toutefois, l'aménagement de collectivités durables est très différent des pratiques standard d'aménagement, et sa mise en œuvre présente de nouveaux défis. Dans le cadre des initiatives d'aménagement de collectivités durables et de compte rendu, le recours à des mesures d'appréciation du rendement (MAR) constitue un élément crucial du passage de la théorie à la pratique. En fait, les MAR sont une utilisation conjointe d'objectifs quantitatifs et d'indicateurs permettant d'évaluer l'efficience et de l'efficacité d'initiatives gouvernementales et non gouvernementales. Jusqu'à présent, peu d'efforts ont été déployés pour évaluer pareilles initiatives municipales à l'aide de MAR.

Toute initiative d'aménagement d'une collectivité durable et de compte rendu où entrent en jeu des MAR comporte généralement sept éléments centraux :

- Un ensemble de buts ou d'objectifs politiques (p. ex. accroître la conservation de l'eau);
- Un ensemble d'indicateurs mesurables représentatifs des buts ou objectifs politiques (p. ex. le nombre de litres par personne);
- Un ensemble de données de référence mettant en lumière les conditions actuelles ou historiques (p. ex. 300 l/pers./jour);
- Un ensemble d'objectifs numériques représentant un état éventuel souhaité (p. ex. 200 l/pers./jour);
- Une ou plusieurs échéances de réalisation de chaque objectif (p. ex. 250 l/pers./j dans cinq ans et 200 l/pers./j dans dix ans);
- Un plan d'action ou une série de mesures à mettre en œuvre pour réaliser un objectif donné;
- Un cadre de compte rendu (p. ex. un rapport d'étape public tous les trois ans).

Le présent document expose quelques-uns des meilleurs efforts déployés à ce jour dans l'élaboration de MAR afin de faire passer l'aménagement de collectivités durables de l'étape de l'établissement d'une vision et d'objectifs à celle de la mise en pratique. Sept études de cas y sont examinées :

- Buffalo's State of the Region Report, New York
- Don Watershed, Ontario
- Civano, Arizona
- Hamilton-Wentworth, Ontario
- Okotoks, Alberta
- Santa Monica, Californie
- Southeast False Creek, Colombie-Britannique

Peck, Steven W. et Ray Tomalty. *Lessons Learned From The Use of Performance Assessment Measures To Implement Sustainable Communities*, Programme de subventions de recherche de la SCHL, Janvier 2002.

Utilisation des mesures d'appréciation du rendement

Ces études de cas révèlent que l'établissement de MAR comporte des avantages tant pour le grand public que pour certaines activités municipales. Les nombreux avantages justifient les efforts qu'il faut déployer pour établir ces MAR. Essentiellement, les MAR constituent un précieux outil dont peuvent se servir les politiciens, les directeurs municipaux et les citoyens pour élaborer une vaste gamme de politiques et de programmes menant à la mise en pratique de visions et de politiques sur la durabilité des collectivités. Au nombre des principales applications des MAR, mentionnons les suivantes :

- Formation et sensibilisation du personnel et des politiciens;
- Appui des processus d'établissement des budgets et des priorités internes;
- Examen et révision des programmes et des politiques;
- Détermination et mise en œuvre des économiques de coûts touchant les activités et les immobilisations;
- Élaboration d'activités, de lignes directrices de planification et de règlements de zonage;
- Sensibilisation du grand public au développement durable;
- Formation et sensibilisation des principaux intéressés et négociation auprès des promoteurs;
- Détermination et établissement de partenariats en fonction d'intérêts communs;
- Évaluation du personnel et élaboration de mesures d'incitation au rendement.

Processus d'élaboration de MAR

La conception de mesures d'appréciation du rendement nécessite généralement un ensemble de recherches et d'analyses réalisées par le personnel et des spécialistes dans le but d'établir un premier ensemble de données de référence et de MAR, le tout étant suivi d'une consultation du public. Au nombre des techniques de consultation de la collectivité utilisées, mentionnons les suivantes :

- Ateliers locaux;
- Participation directe à des comités et à des groupes de travail;
- Guides postés à tous les membres de la collectivité;
- Sondages distribués aux ménages;
- Envois postaux joints aux factures de services publics;
- Technique indirecte par l'entremise des médias.

Méthodes d'établissement des objectifs

Diverses méthodes d'établissement d'objectifs spécifiques pour les MAR ont été utilisées, dont les suivantes :

- Adoption d'objectifs existants tirés d'études ou de politiques établies par des administrations nationales, étatiques, provinciales, régionales ou municipales ou par des organismes connexes;
- Réalisation d'une étude documentaire pour cerner les points de référence pertinents;
- Utilisation de spécialistes au moyen d'ateliers spéciaux et d'entrevues et recours à des experts-conseils;
- Étude documentaire historique pour faciliter l'établissement de l'information de base;
- Sondages, par téléphone ou envoi postal, des valeurs et des attitudes du public;
- Ateliers spéciaux à l'intention des principaux intéressés;
- Analyse des coûts-avantages et analyse de la faisabilité technique;
- Analyse de la sensibilité à la dimension politique;
- Discernement professionnel le meilleur qui soit ou conviction profonde si l'information nécessaire est insuffisante.

Données de référence, compte rendu et suivi

En ce qui concerne les objectifs de compte rendu et de suivi, plusieurs constatations importantes sont ressorties :

- Une période de compte rendu annuelle, triennale ou quinquennale est considérée comme raisonnable, mais cette période peut fluctuer selon la MAR;
- Le processus de révision des objectifs spécifiques doit faire appel aux principaux intéressés;
- Produire des rapports provisoires pour certaines MAR s'il est urgent d'assurer le suivi du degré de réalisation des objectifs et d'apporter des rajustements aux politiques et aux programmes;
- S'assurer que le suivi des principaux objectifs relève de l'organisation;
- Adopter un format de compte rendu qui convient aux principales clientèles de l'organisation;
- Élaborer une stratégie d'information ou de relation avec les médias pour que le public s'intéresse à l'initiative et pour en communiquer les résultats.

Techniques de règlement des différends éventuels au sujet des MAR

L'élaboration de MAR peut soulever des différends, d'où l'importance de se doter d'une stratégie pour en faire un exercice constructif. Les études de cas ont fait ressortir diverses techniques de règlement constructif des différends :

- Laisser tomber les MAR qui suscitent trop de controverse ou en retarder l'élaboration;
- Renoncer à l'établissement d'objectifs quantitatifs pour certains indicateurs controversés et adopter plutôt des objectifs d'orientation, comme celui de réduire la consommation d'énergie d'usage domestique;
- Confier à un autre organisme l'élaboration de toute MAR controversée;
- Entreprendre l'étude de la faisabilité technique ou économique de la MAR en cause;

- ❖ Remettre à plus tard l'adoption d'un objectif quantitatif jusqu'à ce qu'une analyse ou des données plus approfondies soient disponibles et/ou jusqu'au prochain compte rendu;
- ❖ Adopter un objectif provisoire à la condition qu'il soit examiné et dûment révisé ultérieurement.

Accroissement de la légitimité des MAR

L'utilisation de MAR soulève la question de leur légitimité du fait qu'elles peuvent exercer sur la responsabilité des politiciens et du personnel et sur les ressources publiques une influence plus directe que les indicateurs. Nos études de cas ont révélé quelques points et techniques pouvant contribuer à rehausser la légitimité des MAR :

- ❖ Tenter d'obtenir l'approbation des politiciens et des bureaucrates afin d'accroître au maximum les chances de mise en œuvre;
- ❖ Concilier l'ambition des objectifs à l'évaluation réaliste de ce qui peut être réalisé compte tenu de la situation locale et des échéances imparties;
- ❖ Intégrer le plus large éventail possible d'intérêts en choisissant des MAR qui répondent à leurs besoins ainsi qu'aux buts, aux objectifs et à la vision de l'initiative d'aménagement d'une collectivité durable;
- ❖ S'assurer que le grand public comme les principaux spécialistes et dirigeants de la collectivité jouent un rôle significatif dans le processus d'élaboration des MAR;
- ❖ Obtenir le plus large consensus possible au sujet des objectifs, tant auprès des intéressés que du public;
- ❖ Veiller à mettre en place un programme pertinent d'information et de communication pour « vendre » l'initiative au grand public, faire en sorte qu'il appuie les changements à apporter aux politiques et aux programmes et répondre aux critiques;
- ❖ Établir un cadre de compte rendu accessible et justifiable du point de vue technique;
- ❖ Éviter de fixer des objectifs contradictoires ou incohérents et s'assurer que les objectifs tiennent compte des indicateurs et des buts et objectifs généraux de l'initiative d'aménagement d'une collectivité durable.

Renforcement de la mise en œuvre

Pour qu'un objectif se réalise, il faut le relier à certaines étapes ou mesures recommandées montrant comment et par qui l'objectif se réalisera dans une période donnée. L'organisme de mise en œuvre peut faciliter la réalisation de cet objectif au moyen des mesures suivantes :

- ❖ S'assurer que les éventuels responsables de la mise en œuvre de l'initiative en ont adopté le processus et les objectifs (obtenir l'autorisation officielle des objectifs connexes);
- ❖ Comprendre les besoins des principaux groupes d'intéressés et chercher à prendre en compte leurs préoccupations au cours de la mise en œuvre des MAR;
- ❖ Intégrer les buts et les objectifs aux principaux documents municipaux et régionaux;
- ❖ Lever les obstacles réglementaires qui pourraient nuire à la mise en œuvre des MAR;

- ❖ Intégrer une souplesse aux MAR et garder une souplesse tout au long de la mise en œuvre;
- ❖ Utiliser des MAR pour guider et évaluer le personnel dans ses examens annuels du rendement.

Conclusion

Les premières utilisations des MAR à l'appui de l'aménagement de collectivités durables sont très prometteuses et laissent à penser que les objectifs quantifiés constituent une étape cruciale dans les efforts que nous déployons pour préciser et mettre en œuvre des pratiques d'aménagement de collectivités durables. Les MAR peuvent soulever des défis et des différends, mais notre recherche montre que ces défis et ces différends sont compensés par les avantages, dont la clarification des objectifs de la collectivité, l'établissement des priorités, l'amélioration de la reddition de comptes, la sensibilisation et la promotion d'une mise en œuvre concrète. En fait, tous les participants aux études de cas interrogés estiment que l'établissement de MAR en valait la peine. L'établissement de MAR est la prochaine étape logique et hautement nécessaire des efforts que déploient les dirigeants des collectivités canadiennes pour mobiliser les ressources afin de parvenir à la mise en œuvre de collectivités plus durables et plus agréables.

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Introduction

The notion of sustainable communities holds considerable promise for delivering multiple economic, social and environmental benefits to the highly urbanized citizenry of Canada. Sustainable community development however, is very different from the standard development practices of today. It represents a complicated challenge involving a multitude of institutional players, the need for considerable patience and flexibility, steadfast determination, political and community knowledge, leadership and public support. Sustainable community development also promises to be critically important in maintaining the health of our communities, competitiveness and resourcefulness of our businesses and overall quality of life.

The benefits of, and barriers to, implementing holistic approaches to sustainable community development were recently identified in a Canada Mortgage and Housing Corporation sponsored report entitled, "Implementing Sustainable Community Development: Charting A Federal Role for the 21st Century" (Peck, Tomalty, Hercz, and Dauncey, 2001). The report identified the lack of quantified performance assessment measures (PAMs) and reporting frameworks as a key barrier to moving forward. PAMs and associated reporting frameworks can help to clearly define what is meant by community sustainability in the local context, guide the development of policies and programs, and support the monitoring and reporting. This short study represents a modest first step toward helping community leaders in Canada develop performance assessment measures as key part of their sustainable community reporting and development initiatives.

Sustainability Reporting

Community sustainability reporting is an outgrowth of environmental reporting, first developed in the US for application at the federal level (after the passage of the *Environmental Protection Act* in 1970). Since that time, environmental reporting techniques have been applied at the state levels in the US, the provincial level in Canada, the OECD and eventually to municipal contexts (i.e., Seattle in 1976). In Canada, the first municipal environmental report was written for Waterloo in 1987. Since then, many other Canadian municipalities (including Toronto, Ottawa, Vancouver and Burnaby) and regional governments (including Hamilton-Wentworth and Ottawa-Carleton) have undertaken state-of-the environment reports (Campbell and Maclaren, 1995).

Environmental reporting is designed to monitor changes or trends in environmental conditions that reflect the effectiveness of environmental policies and programs. It is typically undertaken by governments themselves and sometimes by non-governmental organizations concerned about environmental issues. Sustainability reporting builds upon environmental reporting by expanding the range of issues reported upon from solely environmental to social and economic concerns and by widening the scope of concern from purely local impacts of local decisions to the regional and global implications (Hancock, 1993).

Environmental and sustainability reporting has been developed in a wide range of contexts and formats, most of which involve the use of indicators. Indicators have been defined variously (see Maclaren, 1996), but generally speaking it is simply a quantifiable social, economic or ecological feature that is chosen to reflect key changes or trends, especially those that can be affected by government or other collective actions. In some cases, an indicator will be a small piece of

information that reflects trends in a larger system (e.g., bird sighting by an amateur ornithological club during a one-week observation period reflects the health of bird populations in the region). In other cases, the indicator may be a direct measure of a policy goal (e.g., the amount of green space in the downtown area of a city).

A number of works have outlined the theoretical, methodological and practical issues associated with the use of indicators as environmental or sustainability reporting tools (e.g., Maclaren, 1996; Campbell and Maclaren, 1995; Burch, 1994; Hancock, 1993; and Elkin, 1990). Despite their importance, issues related to the incorporation of quantitative targets into these reporting frameworks have received little attention in the literature.

Performance Assessment Measures (PAMs)

When quantitative targets are used in combination with indicators for the purposes of evaluating the effectiveness or efficiency of government and non-governmental actions, we refer to them as performance assessment measures (PAMs). A target is a quantified expression of the desired future state of the indicator, usually compared to some past state, or baseline. PAMs are usually developed in the context of community sustainability initiatives that include policy goals and programs or other initiatives designed to achieve those goals. Thus, a community sustainability initiative involving PAMS usually has seven core elements:

- A set of policy goals or objectives (e.g., improve water conservation).
- A set of measurable indicators chosen to represent the policy goals or objectives (e.g., litres/person).
- A baseline set of data to describe current or historical conditions (e.g. 300 litres/person/day).
- A set of numerical targets representing a desired future state (e.g., 200 litres/person/day).
- A time-frame(s) for realizing the target (e.g., 250 litres/person/day in five years and 200 litres/person/day in 10 years).
- An action plan or series of steps that need to be implemented to achieve the target.
- A reporting framework (e.g., public status report every 3 years).

Targets and performance review/reporting mechanisms can play a number of key roles in helping to focus government and community efforts in the direction of sustainability. First, they allow for the 'vague' notion of sustainability to be operationalized across different sectors and departments. This allows for the establishment of policies aimed at achieving targets that reflect what the community desires with regard to its future. Secondly, they can help to ensure that the institutional machinery of government is sufficiently mobilized in support of achieving these outcomes. In the absence of formal mechanisms of scrutiny and review, "efforts to take account of the environment in public policy carries little or no weight in the face of power forces that support the status quo" (Pearce, 1993).

Performance assessment measures were pioneered in the context of efforts to improve the performance of government and reduce the cost of associated services (Wigle, 1998). At the federal level within Canada, the *Auditor General Act of 1995* was amended to launch a new process for building sustainable development considerations into the mandates of federal departments through the use of performance measures. Each department defines its potential contribution to sustainable

development and assesses its progress using relevant measures that will help guide program formulation and review.

In Ontario, the province has recently instituted a performance measurement system that is designed to track and assess the administrative and service delivery efficiency of municipal governments. The new Municipal Performance Measurement Program requires municipal governments to track 35 indicators in nine core service areas such as solid waste management, sewage, water, transportation etc. The province is establishing a Centre for Best Practices to identify and share best practices but is not, at this time, using any specific performance targets (Obright, 2001).

At the municipal level, PAMs have also been used to help improve performance on specific services or reduce unwanted environmental or social impacts. For example, in the mid-1990s, Ottawa launched a performance measurement program for the delivery of water services.

The Use of PAMs in Sustainability Reporting

Performance Assessment Measures are also increasingly being used by governments and non-governmental organizations to assess the effectiveness of government programs in affecting wider variables such as the quality of life or community sustainability. The most comprehensive use of such systems was at the state level in the US, namely by Minnesota and Oregon. The Minnesota Milestones program was designed to measure progress towards measurable goals based on what citizens said was their long-range vision for the state. Launched in 1991, the targets and indicators were adopted the next year and the first report appeared in 1993, with subsequent reports in 1996 and 1998. Each report included recommendations to relevant government bodies on policy and program changes needed to advance towards the stated goals (Minnesota, 1993, 1996, 1998).

In Oregon, a "Progress Board" was established by the Oregon legislature in 1989 to put in place a framework to assess progress towards the goals of the state strategic plan ("Oregon Shines") and to develop strategies and programs to achieve the associated goals. After extensive consultation with the public, the Oregon Benchmark process was launched in 1991. The framework consists of 269 indicators, most of which have quantitative targets (or "benchmarks") associated with them. The targets cover a wide range of social, economic and environmental policy goals such as education, health, child welfare, transportation and land use. A report card is published every two years. The report card is used by state government officials to help them set program and budget priorities (Oregon Progress Board, 1993, 1995, 1997).

The use of PAMs in a context of community sustainability programs undertaken at the municipal level has been widely recommended. For example, the Charter of European Cities and Towns toward Sustainability recommends that local governments set up long-term local action plans that will move their communities towards sustainability, including the use of measurable targets (ICLEI, 1998). As one of its last actions before closing, the Ontario Round Table on Environment and Economy issued a "Sustainable Communities Resource Package" in 1995. The Round Table recommended that sustainable community project participants establish clear objectives that reflect the broad sustainable development goals and "that should be attainable and measurable." One of the advantages of setting clear objectives is that "it requires the establishment of indicators and/or benchmarks that can be used to evaluate progress toward achieving the communities goals and objectives" (ORTEE, 1995).

In 1997, the City of Ottawa held a workshop on indicator development for sustainable communities. In the report, Sustainability Indicators Workbook, it states that "it is essential that indicators are linked with a goal, objective or target." One of the reasons for this is "to provide a basis for accountability" (Ottawa, 1997).

Despite this widespread endorsement of PAMs as a tool to be used within the context of community sustainability programs, there are few well-developed examples at the municipal level (Devust, 2001). Jacksonville, Florida and Pasadena, California stand out as early efforts to develop integrated PAMs of sustainable community development. Jacksonville's program has used 74 indicators and 72 targets to track quality of life since 1983. Pasadena's program includes 112 indicators across 10 major areas including health, environment, education, housing and the arts. Pasadena has established quantitative targets for one-third of its indicators (Corson, 1995).

In most sustainable community initiatives, a qualitative vision for the community preceeds the identification and adoption of indicators that can be used to track social, economic and ecological changes. In all but a handful of the cases reviewed, quantifiable targets against which tangible progress (or a lack thereof) can be measured are rarely assigned to indicators. This tendency may be attributable in large measure to the fact that developing PAMs raises issues that are not normally raised, or not raised to the same degree, by indicator or visioning initiatives. This includes issues related to the need to:

- Amass data and establish baseline conditions.
- Decide upon the desired targets.
- Involve and mediate between experts, politicians and the general public.
- Address questions about the technical and economic feasibility of the targets.
- Report on progress towards the targets.
- Consider political and bureaucratic accountability for achieving the targets.

Despite these challenges, innovative communities are developing and using PAMs for sustainable development and are finding that they can serve as useful tools to help develop and structure community sustainability policies, set action plans, allocate resources, leverage participation from community, educate and monitor progress. As one interviewee put it, "PAMs move the debate from the realm of theory into the realm of tangible action".

The purpose of this report is to review some of the most instructive sustainable community initiatives making use of PAMs, with the aim of improving their practical application at the community level by providing information that will support practitioners. The focus then, is on identifying existing practical experience with PAMs and identifying common lessons learned. This research is designed to achieve the following specific objectives:

- To develop detailed case studies of sustainable community developments that use PAMs.
- To identify and describe the different approaches or processes being used to establish PAMs.
- To identify and describe different applications or uses of PAMs.
- To identify some of the key lessons learned by those who have actively been involved in the establishment and use of PAMs.

Methodology

The main research method used was case study analysis. First, a list of 150 sustainable community development initiatives involving the use of indicators was identified using the following sources of information:

- Telephone interviews with academics, consultants and government officials having a broad knowledge of sustainable development indicators and targets (for a list of interviewees, see Appendix IV).
- Internet research looking at project profiles of sustainable community development projects in North America.
- Library research reviewing planning documents and reports related to community indicator projects.

These initiatives were further investigated to determine if numeric targets were being used. This preliminary research revealed that the use of quantified targets was not widespread: only 18 projects were identified, representing just over 10 per cent of the initiatives reviewed. These projects were short-listed as potential case study candidates (listed in Appendix I) and further explored to determine if they would be appropriate for detailed case study. An important criterion for case study selection was whether the PAMs were being used in the context of a broader community sustainability initiative. In order to assess the candidates for case study on this basis, we identified 12 dimensions or typical features of community sustainability (adapted from Peck, Tomalty, Hercz and Dauncey, 2001). These features appear in Table A below. Other criteria used for the selection of case studies included:

- Representation of different scales (community, local, regional etc.).
- Representation of different development context (urban, suburban, rural, mixed, etc.).
- A range of different processes/approaches used to develop the PAMs.
- Innovation in the way the PAMs are being used or were developed.
- Availability of information.

Table A: Common Features of Sustainable Community Developments

1. Ecological Protection
2. Transit-Supportive Urban Design
3. Urban Infill and Village Centres
4. Healthy Local Economy
5. Sustainable Transportation
6. Affordable Housing
7. Liveable Community
8. Low-Impact Sewage and Stormwater Treatment
9. Water Conservation
10. Energy Efficiency
11. The 3 Rs
12. Better Planning

Additional details about these 12 features are included as Appendix II in this report.

The resulting set of seven case studies selected for this research cover a range of different development contexts and scales, ranging from subdivisions to neighbourhood, community and regional levels. They also provide a broad scope of activity in this field in a variety of different institutional, development and geographic contexts. The cases selected and the justification for their selection are presented in Table B.

Information for each case study was gathered through the analysis of relevant documents and by conducting at least 2 interviews with individuals that were directly involved in the case. For each of the case studies presented in this report, the research team worked to gather insights on:

- The context in which the case arose.
- The actual PAMs used in the case.
- The processes used to define the PAMs.
- The use or applicability of the PAMs in terms of fostering positive change.
- Problems or challenges overcome in implementing policies to achieve targets.
- Lessons learned.

The survey questionnaire is included as Appendix III and list of interviewees in Appendix IV.

Table B: Cases for Detailed Studies and Rationale for Selection

Case Studies	Rationale for Selection
Buffalo State of the Region Report, NY	Is regional in scope and contains a PAM for Urban Infill, which appeared in few other projects.
Don Watershed, ON	Is watershed-wide and they have been through two separate rounds of PAM establishment and use.
Civano, AZ	This project used the IMPACT (integrated method of performance and cost tracking) system to develop PAMs. It also covers a number of the 12 features of community sustainability including Local Economy and Energy.
Hamilton-Wentworth, ON	Uses PAMs to implement a program rather than for assessment and/or community design. There is a lot of information available about this initiative and it is the only project reviewed which has a PAM for Town/Village Centre.
Okotoks, AB	Developed some PAMs based on the estimated carrying capacity of the area. It also includes a PAM for Livable Communities.
Santa Monica, CA	Uses PAMs to implement a program rather than for assessment and/or community design. It addresses a number of the 12 features of community sustainability including Livable Communities.
Southeast False Creek, BC	Addresses 9 of the 12 features and used processes such as benchmarking, full cost accounting, integrated resource accounting, GIS and CAD to develop the PAMs.

Collectively, the practical experiences of those working on the development and implementation of PAMs described below provide a wealth of information that may be of use to community leaders that are truly committed to developing and implementing comprehensive sustainable community development projects. More importantly they provide a roadmap and require a process that can help one to operationalize and tailor the vague notion of sustainable development to local and regional circumstances.

Don Watershed Report Card – Toronto, Ontario

Case Identification

In 1992, the Metropolitan Toronto and Region Conservation Authority, a government body with authority over development in the floodplains of the Don River, created the Don Watershed Task Force. The primary mandate of this Task Force was to develop a management, or regeneration plan for the entire watershed, using an ecosystem-based approach. The Task Force had 25 members and their alternates including: one elected representative from each of the then 10 municipal governments with jurisdiction over watershed lands; 10 citizen watershed residents; and representatives from interested environmental organizations. In 1994, they released their plan entitled, "Forty Steps to A New Don", which was formally endorsed by the Conservation Authority. The plan describes forty strategies or steps to regenerate the Don River organized under four headings – Caring for Water, Caring For Nature, Caring for Community and Getting it Done. It also contained plans for the detailed regeneration of specific sites throughout the watershed. Step 39 of "Forty Steps to A New Don" required the publication of a Don Report Card every three years to "mark and celebrate progress in the Don's regeneration." Thus far, two report cards, "Turning the Corner - 1997" and "A Time for Bold Steps - 2000" have been issued.

Context

The Don River flows through the heart of Toronto, Ontario, the largest urban region in Canada. The Don River watershed is the total land area that drains into the Don River. It is home to over 800,000 people. Over the past 200 years it has been intensely developed, with significant development post WWII. The watershed is currently over 80 per cent urbanized. The Don River's headwaters lie in the Oak Ridges Moraine, a 200 kilometer long belt of glacial deposits which act as the 'rain barrel' for much of southern Ontario, supplying base flow to numerous rivers and streams. The Don River headwaters lay 38 kilometers North of Lake Ontario, and the river drains an area of 360 square kilometers (see Figure 1 for map on the following page).

The Don watershed can be divided into seven subwatersheds, each with different regeneration challenges and opportunities. Generally, the more northern reaches of the river are less developed than the southern subwatersheds, which bore the brunt of earlier urban development.

After the publication of "Forty Steps to A New Don", the Conservation Authority established the "Don Watershed Regeneration Council", a body of citizens and elected officials that is working to implement the strategies described in the "Forty Steps". This Council is charged with fund raising, leading regeneration projects, education and advocacy across the watershed. In 1995, the Council established the Don Watershed Reporting and Monitoring Committee and charged it with responsibility for developing the first Don Report Card, Step 39 of "Forty Steps to A New Don".

The Reporting and Monitoring Committee felt that it was important to strive for scientific validity as well as 'buy-in' from as many individuals as possible who have jurisdiction over areas that impact upon the Don. The first report card was published in 1997, and was the result of extensive public consultations across the watershed as well as expert workshops and stakeholder consultations with municipal representatives. The result of this effort was 18 different indicators, each with three

sets of targets or specific aims to be achieved in the years 2000, 2010, and 2030. The 2000 target represented what the Committee believed would be achievable in the short term by the time the next Report Card was due. The 2010 targets are more challenging and would require more time to achieve while the 2030 targets represented more ambitious goals and also recognized that regenerating the watershed is a long term process requiring intergenerational commitment.

Figure 1: Don River Watershed, Ontario

Performance Assessment Measures (PAMs)

Given that the focus of this work is on watershed regeneration, many of the indicators and targets are not directly applicable to the common features of urban sustainability identified in Table B and Appendix II. A selection of indicators and targets from the first Report Card provides examples of the different types of targets uses and is presented in Table C, on the following page.

A first watershed report card was published in 1997 and contained the original 18 PAMs. A second report was published in 2000, which contained information on progress and problems to date, and a number of revised targets. The following table shows a selection of the original targets, organized to reflect the common features of sustainable community categories.

Table C: Indicators, Baselines and PAMs for the Don Watershed

Feature	Indicator(s)	Baseline (1990)	Target 2000	Target 2010	Target 2030
Ecological Protection	Number of regeneration projects to date.	100	200	400	800
	Percentage of watershed that is wetland.	0.14	NA	0.28	0.5
	Percentage of watershed that is meadow.	3.5	NA	4	5
	Percentage of watershed that is woodland.	8	NA	NA	10
	Percentage of streambank length that is riparian habitat.	57	NA	NA	75
Transit Supportive Urban Design	NA	NA	NA	NA	NA
Urban Infill and Village Centres	NA	NA	NA	NA	NA
Healthy Local Economy	NA	NA	NA	NA	NA
Sustainable Transportation	NA	NA	NA	NA	NA
Affordable Housing	NA	NA	NA	NA	NA
Livable Community	NA	NA	NA	NA	NA
Sewage and Stormwater Treatment	Percentage of the urbanized watershed area that has quality controls.	5.3	NA	50	75
	Percentage of the urbanized watershed area that has quantity controls.	15.9	NA	50	75
Water Conservation	NA	NA	NA	NA	NA
Energy Efficiency	NA	NA	NA	NA	NA
3 R's	NA	NA	NA	NA	NA
Better Planning	NA	NA	NA	NA	NA
Other	Number of volunteers active in the watershed.	Several hundred	3000	10,000	NA

NA – not available.

Process

"We realized early on that indicators were meaningless without targets to measure them against" (interviewee).

The initial report card process involved the Committee brainstorming several hundred indicators based on the structure and principles established in "Forty Steps" – Caring for Water, Caring for Nature, Caring for Community and Getting it Done. There was a considerable amount of work involved in identifying 'integrative' indicators, those that represented multiple changes in the watershed and its communities. After a more manageable list of indicators was selected, the Conservation Authority hired consultants to work with their staff and the Committee members to research and pull together information on key indicators that had been pre-selected by the Committee. Key questions about availability of data and our ability to continue to monitor the indicators were addressed.

A short list of indicators was subject to an interdisciplinary expert workshop. Since the individuals responsible for implementing change were a key stakeholder group and audience, there were consultations with municipal, provincial and federal regulators and program implementers. There were also public consultations in each of the seven sub watersheds. It was important to the Committee and the Conservation Authority that the indicators and targets would be understandable to the layperson. A considerable amount of effort was expended to ensure that the technical information was presented in an accessible and entertaining manner. The indicators were established first, and then work began on the targets.

In order to establish meaningful targets that could stimulate further action to restore the watershed and provide a measure of accountability, the Committee needed a temporal framework, one that people would be able to understand and take ownership of. Fifty years was considered too long and 10 years, in some cases too short. The Committee established the 3, 10, 30 year framework for targets as a means to address short term issues and opportunities for change, (such as regeneration projects), while promoting ownership of the longer term issues, such as the base flow of the river. After establishing this framework, a variety of processes were used, including expert consultation, public consultation, survey data, bench marking and the adoption of pre-existing targets.

For example, indicator 1, the "Flow Pattern of the Don River", required the establishment of a historical baseline (1962) a key year when the flow pattern changed. It may be possible to stabilize the flow pattern at this level again, but perhaps not. According to one interviewee, "This requires a combination of science, guesswork and historical data, but we could not shy aware from targets because we needed better information".

There was a realization that the biophysical system would change slowly, not in just 3 years, so the Committee decided to set targets and report on the community or social efforts, such as the number of regeneration projects and number of schools teaching in the Don. The program 'activity' targets are important from a community perspective because they help to maintain profile and momentum for change.

The Conservation Authority conducted a professional poll to indicate levels of understanding and support for regenerating the watershed among the general population. Since the polls indicated a high level of public support existed, the target became to maintain this high level. Other targets involved engaging more people in ecological regeneration, and this was based on the level of effort – funding and human resources – required to develop regeneration sites with high levels of community participation.

The Conservation Authority is also using the indicator species approach. This involves identifying the life function of a particular species and then monitoring for its existence. If one finds a species in the Don Watershed, such as the gray tree frog, it indicates something positive about the quality of the habitat and in this case, the presence of clean, still waters. These types of indicators can be tracked through community monitoring programs.

Uses

Short term targets of three years require that the Conservation Authority set priorities and establish implementation plans. The targets raise the question as to the priority actions that can be undertaken by the Authority or in partnership with someone else. The short term targets help to drive the Authority's core funding requirements. The targets also help to drive funding applications and have helped funders, such as the federal government's *Great Lake Sustainability Fund* focus their funding activity.

Targets were used by Conservation Authority staff when they conducted reviews of site development plans. Conceptually, the indicators and targets also promote a systems approach to land use by addressing the cumulative impacts of, for example, deforestation or wetland destruction, rather than examining specific projects only.

The targets have also helped municipal governments with their planning. For example, the York Region "Greening Strategy" has used some of the targets set for re-establishing riparian habitat. The targets have also had an influence on the land management practices of some municipal governments.

Targets are even used by some development consultants with planners and developers on specific projects. The targets have helped to define environmental protection at the site planning and subdivision level.

The Report Card has been supportive of municipalities in their efforts to improve stormwater. It has helped to build a broader constituency of approval and allowed the bureaucracy to use the targets in their work with councillors.

Targets can be used to help us define and advocate for ongoing monitoring activities by a number of agencies. There have been monitoring cutbacks and there has been duplication which can be overcome through the identification of the key indicators that need to be monitored to track progress towards the targets.

Problems

A scientific review was conducted whenever possible but the science is very poor in many areas and, for example, stormwater targets were fairly vague as a result. It was also often hard to know what the best ecological value for an area might be. For example, forests versus meadowlands. It's important to balance scientific, technical expertise with community needs.

Some of the initial targets were unrealistic (e.g., wetland restoration) and thus, were not met and had to be revised in the second Report Card. If targets are unrealistic, they can set back the whole sustainabiity initiative by undermining confidence in the process and demoralizing the participants.

Lack of useful data, both historical and current is a problem. There have been steady monitoring expenditure cutbacks. It took a lot of effort to get data. Often one has to merge data that was gathered using different methodologies. It can be difficult to derive information that is accurate and which can be meaningfully communicated to the public. In some cases, it may be necessary to delay setting targets until sufficient data is available.

Lessons Learned

Target setting requires a combination of science and local understanding. Base targets on regulatory need and community desires. One should not be afraid to use targets from other organizations or geographic areas but one must address local needs and situations.

Spend as much time as you can initially to get as much 'buy-in' from as many groups as possible, particularly those who share jurisdiction over implementation. It's very important to know who your audiences are. This involves, for example, being politically astute. Don't set your politicians up for failure. Consider the time frame for your targets as it relates to priorities and opportunities.

Do not let the reporting process become the 'master'. You do not have to have targets and indicators for everything. Consider how your target setting will affect your resources when you need to report back.

There is a need to celebrate progress when it occurs. Make sure that you use publicity as a tool to build awareness of what you are doing.

Community of Civano – Tucson, Arizona

Case Identification

Built on 818 acres of land formerly owned by the State Trust in Tucson Arizona, Civano was created to demonstrate that community development projects allow people to meet financial targets while "maintaining social values and ecological harmony". By 2011, 2800 homes and 1.3 million square feet will make up this green field development. To date 160 homes in Phase I of a three-phase plan have been completed (see Figure 2 for layout of Phase I).

The concept for Civano was developed over twenty years ago by the Metropolitan Energy Commission (MEC), a special interest group with a focus on solar energy. In the early 1990s, MEC was joined by the City of Tucson, the latter which assumed an active role in the administration and marketing of the project, as well as the State Land Department, which legally owned the land selected for development. In 1994, a Technical Advisory Committee was struck to identify performance targets for Civano that would balance the needs and abilities of a developer with the key goals of the project: creating a world-class example of innovation and sustainable development. The performance targets were based upon neo-traditional planning practices and eventually evolved into the Integrated Method of Performance and Cost Tracking (IMPACT) developed as a means of organizing resource efficiency goals, stakeholder cooperation and for measuring progress towards those goals over time.

Figure 2. Phase I of Civano

Context

The Civano concept was originally conceived in 1981 by the solar technology sector after then Governor of Arizona, Bruce Babbit attended a 1979 Showcase of Solar Homes and challenged participants to continue to develop innovative energy alternatives (see Table D for chronology of Civano's development). The project, then under the name the Tucson Solar Village, received funding from the Arizona Department of Commerce to create a plan for a community with significantly reduced resource consumption and environmental impact.

Over the years, the scope of the project broadened to include targets to reduce water use, air pollution, solid waste, create employment in the community and provide affordable homes. The City of Tucson, an active partner in the project since 1991, worked with the State Land Trust (who legally owned the land selected as the development site) to create re-zoning guidelines that addressed the environmental and social requirements that any future developments on the site must adhere to. Eight hundred and eighteen acres of the land in 1991 was subsequently designated for Civano that, through the re-zoning, would only be granted permits for development if aggressive resource conservation efforts and sustainable designs were implemented. The specific requirements of meeting each of the re-zoning standards were outlined in a Memorandum of Understanding (MOU) between the developer and the City of Tucson.

Table D: Chronology of Civano's Development

Year		Milestone
1979		Governor Bruce Babbit issues challenge to alternative energy sector
1981		Tucson Solar Village conceptualize
1994		City of Tucson officially becomes partner in Civano
1994		Rezoning of State Trust Land
1994–1995		Development of IMPACT
1996		Development site auctioned to Case Enterprises
1997		Phase I construction begins
1999		First families move into Phase I
2001		Monitoring data analyzed
2011		Scheduled completion Civano

In order to clarify and track the goals and requirements of Civano, a list of performance targets, called the Integrated Method of Performance Cost and Tracking, was drafted in consultation with academics, builders, designers and public interest groups. Upon completion of the IMPACT, the City of Tucson, attempting to promote Civano to real estate professionals (and ultimately the developers of Civano), initiated marketing and educational campaigns to explain the concepts of the proposed development project and the performance targets that would be expected to be met by developers.

In July 1996 one bid, for US$2.7 million, was put forward for the land at an auction by a joint venture called The Community of Civano owned by Case Enterprises who committed an additional US$20 million to conduct energy designs. Public investments, which were included in the purchase

agreement, included US$30 million in tax-exempt bonds for infrastructure (roadwork, paving, landscaping, sanitary sewers, potable water, fire water lines and road signage); a US$4 million dollar bond for a park and community center; and, the implementation of educational programming for Civano's builders and suppliers.

The initial public expense was considered an investment by the City of Tucson, which viewed Civano as an experimental project to test sustainable development practices. Civano is designed to be a public example to developers, planners and builders that sustainable projects can be financially and technically feasible, thus, attracting more projects of the same nature. By nurturing the know-how and creating a market for similar projects, Tucson, using the lessons learned from the implementation of Civano, would be able to continue to grow while, it was hoped, placing no further demands on natural resources or demanding new expenditures to significantly expand the City's existing infrastructure.

The City estimated that savings stemming from deferring capital improvements for Civano, and potentially other sustainable development projects, in water, road and waste infrastructure could result in a 16 per cent annual return on investment based on a 20-year amortization period. Additional savings were also to accrue from improvements to air quality, sewage treatment and social cohesion (e.g., a reduction in crime resulting from more community involvement).

The development of Civano's standards was loosely based on neo-traditional planning principles. Elements of this planning model's standards that were incorporated into the design of Civano include:

- Neighbourhoods have a discernible centre.
- Dwellings are built within a five-minute walk of the centre.
- There are a variety of dwelling types. There are neighbourhood shops and offices of varied types to supply the needs of a household.
- Elementary schools are within walking distance from dwellings.
- Playgrounds near every dwelling.
- Streets are a connected network that disperses traffic by providing a variety of pedestrian and vehicular routes to any destination.
- Streets are relatively narrow and shaded by rows of trees.
- Parking is relegated to the rear of buildings.

In the fall of 1999 the first families moved into Civano and Phase I, comprised of 160 homes has since completely sold out. When asked why they chose to live in Civano, the residents most often cited its environmental protection goals and the neighbourhood design that creates a strong sense of community. Likewise, in 1998 Global Solar, a photovoltaic manufacturer, opened the first commercial building in Civano. The company chose Civano because of its association with sustainability. An eco-industrial park, which could represent a major economic bonus to developers and jobs for the community, is also being planned.

Area developers and builders, seeing the successful implementation of Civano, are beginning to use many of the principles of development that Civano follows including building design and energy efficiency. As developers become aware of the available technology, they were finding it

increasingly easy to locate companies that have sustainable housing options in their product line (e.g., straw bale, adobe, RASTRA block or rammed earth) or, are more willing to make changes to accommodate the goals of the development. Therefore, from this perspective, Civano can already been seen as meeting the goal of creating a sector for sustainable building practices.

Performance Assessment Measures

The following Table E shows a selection of the PAMs included in the MOU between the City and the developers. CDC Partners reported difficulty in reaching some of the targets, finding them ambiguous and thus difficult to monitor and assess. Baseline information is limited because the project is about a new green field development so averages for traditional developments were used as baselines. Regular monitoring and reporting on the development as it proceeds is planned.

Table E: Indicators, Baselines and PAMs for Civano

Feature	**Indicator(s)**	Baseline	**Target**
Ecological Protection	NA	NA	NA
Transit-Supportive Urban Design	NA	NA	NA
Urban Infill and Village Centres	NA	NA	NA
Healthy Local Economy	Number of jobs on-site for every two residents.	NA	1
Sustainable Transportation	Vehicle miles traveled in miles per year.	Tucson's 1993 baseline level.	Under Tucson's 1993 baseline level.
Affordable Housing	Percentage of dwellings that will be priced for low and moderate-income households.	NA	20 (2011)
Liveable Community	NA	NA	NA
Low-Impact Sewage and Stormwater Treatment	NA	NA	NA
Water Conservation	Gallons per day in residential interior water consumption.	53	26
	Gallons per day in residential exterior water consumption.	NA	28
Energy Efficiency	Overall energy consumption, as a ratio of 1990 baseline.	1990 baseline information	Single-family residential: .35 Multi-family residential: .35 Commercial: .45
3Rs	Percent reduction of landfilled solid waste, compared to Tucson 1993 baseline level	1993 baseline information	Initially 30, increasing to 60
Better Planning	NA	NA	NA

NA – not available.

Process

Originally, the Metropolitan Energy Commission (MEC) established a list of performance targets. However, many of these targets were developed in an arbitrary manner, without much thought given to available technology, marketability and economic feasibility. The performance targets were

based upon the goal of reducing resource consumption within the project compared to the average new home in the City of Tucson and generating infrastructure cost savings. The original targets were as follows:

Energy Conservation	75% reduction
Water Conservation	65% reduction
Solid Waste	90% reduction
Air Pollution	40% reduction
Employment	Create 1 job for every 2 residences

There was initial uncertainty about the nature of the targets and their role in determining how the development should proceed (e.g., were these minimum standards or general goals?). It was unclear how the targets would be administered, enforced and remain current, creating problems among planners, suppliers, developers and builders. This resulted in the City being unable to attract developers to take on the project. Therefore, in 1994, a Technical Advisory Committee was established by the City of Tucson and MEC in order to facilitate the process of creating clear and workable development standards for Civano. The Committee, comprised mostly of academics and engineers, was guided by two basic principles:

- The standards must be both exemplary and feasible.
- The standards must foster creativity and innovation in construction.

The Advisory Committee believed that the best way to foster these principles was to create clear standards with performance targets while allowing designers and builders maximum flexibility in how they would approach implementation. This approach was taken in order to encourage innovation and competition by permitting the application of a wide range of design and construction techniques, to meet the performance targets. The targets were agreed upon after a year-long process involving 1. stakeholder meetings, 2. public meetings, 3. private consultations, and, 4. expert review panels. To ensure that the targets being set were feasible, research on available technology and materials was conducted.

Analysis of 1991 baseline data for the City of Tucson was used to develop targets for energy supply, water use, solid waste disposal and recycling, transportation and jobs/housing balance. Additionally, economic and computer modeling of energy use by MEC (with funds from the Arizona Department of Commerce) enabled the committee to accurately quantify practical reductions in energy consumption and create a sustainable energy target. In the case of Civano, the target for households was 50% less consumption than the current Model Energy Code of the City of Tucson.

The combination of the standards and the development of targets led to the eventual development the Integrated Method of Performance and Cost Tracking (IMPACT), by the City of Tucson. By August of 1995, the first draft of the IMPACT was presented to a group of builders and architects. They deemed that the targets, while requiring improvements to the then available construction materials and methods, were feasible and did not create insurmountable barriers to the development of the project. After further consultations, the final version of IMPACT was completed

in 1996 as part of the MOU within the development agreement between the City of Tucson and Case Enterprises.

Now in the second year of a twelve-year development plan for Civano, the City and the developer, attempting to identify and reconcile problems as IMPACT goals are worked towards, still meet every three months. Effectiveness of the targets and the development of new technology are discussed at these meetings.

Technical monitoring of how Civano is meeting its targets was undertaken for the first time in the fall of 2001. While still being analyzed, the data from 30 households on energy consumption are indicating that usage is approximately 60 per cent less than the average new home in the City of Tucson. Monitoring is also to be conducted on the effectiveness of targets for the project goals and on Civano's use of available technologies.

Uses

The use of performance targets have gone through three different phases during their lifetime. Originally the performance targets for Civano were devised to organize resource efficiency goals for the drivers of the project by MEC. After partnering with the City of Tucson and the development of IMPACT, the performance targets were used to clarify the requirements of the developer as per the re-zoning conditions established by the City of Tucson Zoning Ordinance 7697. Today, IMPACT is also used as a tool to monitor Civano's progress towards becoming a sustainable community.

IMPACT acts as a guideline to base decisions for the development of Civano and is a guiding principal for its governance. Any variances from the targets that are requested or identified require Civano Community Council action and City input. For the developer, the targets framed the project context by providing clear, measurable objectives.

The creation of IMPACT also opened up a dialogue about green building design and development within the community that otherwise would not have occurred.

Problems

Initially, target development for Civano did not address technical, marketing and economic feasibility issues, nor did the original plan incorporate provisions for defining and modifying targets over time. This resulted in little to no interest on the part of the development industry to become involved in Civano. As mentioned earlier, a Technical Advisory Committee was established by the City of Tucson in order to address issues related to these concerns. The City complemented this with educational programs for builders, suppliers and designers as part of its implementation program.

Once development was started, many unforeseen barriers began to form at the City level. Several departments within the City of Tucson, with no prior experience working on a project of this kind, were either unable or unwilling to allow some of the innovations designed specifically to allow Civano to meet its targets to proceed. An example of this was the rejection of a new hydrology

design that would allow Civano to save on water consumption. The rejection of the permits by the City resulted in greatly increased expenditures and construction delays.

As the entire process was completely new to both the City of Tucson and the developers, concerns that a number of the targets were still too ambitious, and in some cases contradictory, were voiced as Civano moved from being a concept to a reality. An example of this was the requirement to reserve 20 per cent of the development for affordable housing for low and moderate income households; while at the same time meeting a 50 per cent reduction in household energy consumption below the Model Energy Code. Meeting the energy efficiency target required that more expensive materials be used for construction making affordability targets a challenge. This resulted in challenges for the developer to meet its own financial objectives from the sale of homes.

Finding building companies that would be willing and able to create housing that fit within Civano's goals proved a challenge. In 1997, when builders were sought by the developer there was no incentive for national companies to adjust their product lines to fit the standards of Civano. Now, as Civano has proven to be financially successful for building companies and more technology has become available, the number of builders willing to get involved is increasing.

Lessons Learned

Civano represented, to many participants, a new way of thinking about urban developments. Since many of the development concepts were new to Tucson, lessons were learned along the road to implementation. Most of these lessons can be broken down into two principles:

- Define your goals early on in the planning process.
- Research and develop a marketing strategy and work to educate target groups.

Early on in the project, Civano was purely about energy efficiency practices and the use of alternative energy technologies. Other strategies were eventually introduced that addressed decreasing reliance on vehicles through the improved design of neighbourhoods. As the vision began to grow and evolve, so did the ambiguity of the goals resulting in some confusion among the development sector. When a direction for Civano was established through the development of IMPACT, a clear context was presented to the development community that then accepted the project as feasible and worthwhile. One key factor in winning their acceptance and the ultimate success of Civano was the involvement of real estate and development professionals in the process who were able to identify and to resolve marketing and economic feasibility challenges early on.

One lesson that stands out to both City officials and the developers was the need to know to whom to market the development project. In terms of designers, suppliers and builders there was no incentive or leadership for companies to change their products to conform to sustainable development construction and design standards. By providing training, education and empirical data, partners can work to overcome the real or perceived risk to the developer in moving in a sustainable direction. As an incentive to developers the City developed an extensive educational

program for designers, builders and developers as a means of enticing involvement. Additionally, the City of Tucson in partnership with the Arizona Energy Office agreed to give substantial support in marketing the advantages of sustainable building standards and the Civano program. All designers, developers, suppliers and builders were included in advertisements, thus offsetting some of the perceived risks of using advanced building technologies with the reward of marketing support and the City's official endorsement of the project.

Vision 2020 – Hamilton– Wentworth, Ontario

Case Identification

The Hamilton –Wentworth Region has a population of approximately 468,000. At the time "Vision 2020" was developed, the Region consisted of six municipalities, the largest being the City of Hamilton with a population of about 322,000. The Region has since been amalgamated to form one municipal government.

In 1993 the Regional government formed a Citizens Task Force to develop a vision for the region. This later became known as "Vision 2020", a strategy based on the principles of sustainable development. Vision 2020 contained 14 theme areas such as "Improving the Quality of Water Resources" and "Consuming Less Energy" and a set of sustainability indicators and targets for each. The process also provided for continuous monitoring to assess the degree of progress in achieving the vision.

Context

Traditionally, Hamilton-Wentworth's economy was dominated by steel and agricultural sectors. Over the last 15 years, the economy has diversified, although steel production remains very important.

The main motivation for developing Vision 2020 was the desire to create an environmentally and socially more desirable future for the region's inhabitants. This desire was, in large measure, the result of environmental problems that the region faced after decades of intense industrial development.

In the late 1980s, the chairman of the Regional government decided to form a Citizens Task Force and charged them with the responsibility of developing a vision for a more sustainable community as well as strategies and action plans for implementation. By 1993, the Task Force had developed a sustainable community vision - Vision 2020.

A great concern of the Task Force was that with time, the vision would be forgotten and there would be little attempt to implement it. To address this concern the Task Force recognized the need to develop indicators and targets that could be used in continuous community monitoring to measure progress in achieving the vision.

This led to the "Indicators Project" in the summer of 1994. A Project Team was formed to develop the indicators. It was a collaborative effort involving staff from the Hamilton-Wentworth Environmental Department, the Environmental Health Program at McMaster University and the International Council for Local Environmental Initiatives. The primary audience for the indicators was the general public and the indicators were developed through an extensive community consultation process.

A key objective of the project was to identify indicators that the general public could easily relate to. This would make it possible for the public to determine what they had to change or modify in

terms of their life-style or behavior in order to fulfill Vision 2020. For the same reason, it was decided to put the emphasis on community-centred indicators rather than highly technical indicators that would be more scientific in nature. The development of both types of indicators was discussed and the Project Team identified the following criteria for their development:

- Indicators should be measurable, credible and valid.
- Required data should be relevant, easily assessable, and inexpensive to develop or obtain.
- Indicators should reflect a balance between economic, social/health, and environmental factors.
- Indicators should be capable of changing as a result of individual or community action.

A literature search provided the Project Team resulted in a first set of 80 potential indicators. To encourage community involvement in the development of the indicators, a workbook was created that allowed citizens to select their preferred indicators from those listed in the workbook, formulate their own, and make suggestions about possible targets for each indicator.

Invitations to participate in the workbook consultation were mailed to 1,400 individuals and/or organizations. Workbooks were also distributed either through direct contact with groups or individuals who had expressed interest in the Region's sustainable community activities and through media publicity to the public. Workshops were held to assist people in completing the workbook. About 110 workbooks were returned for analysis. By consulting the public (and additional research and consultation with local experts) the Project Team was able to evaluate the 80 indicators they had already identified and review an additional 200 new indicator suggestions. The final result was a list of 29 indicators that were formally approved by the Regional Council in July 1996.

While the indicators did reflect all of the factors affecting the quality of life and sustainability in the Region, they did provide a snapshot of important trends. The indicators were chosen and were reported in a format that provided a simple way to keep citizens informed of progress in working towards implementing Vision 2020.

In addition to indicators, baseline data for 1993 and targets were also presented to Regional Council in June of 1996 and publicly available reports were prepared. The reporting took two forms. One form was a Report Card, that provided citizens with a quick overview and featured happy or sad faces connected to each of the themes or issue areas to indicate where progress was being made on a given target. The other form was a comprehensive background report entitled, "Signposts on the Trail to Vision 2020". In "Signposts on the Trail to Vision 2020" each of the 14 theme areas is profiled, including the goals for that theme, along with a list of primary indicators, supplementary indicators and useful contacts. The report also provides a detailed analysis of each indicator including a description of the indicator, the trend, limitations of the indicator, targets for the indicator and a general commentary on what the findings mean. Suggestions as to what government, citizens, community organizations and businesses can do are also included.

<u>Performance Assessment Measures (PAMs)</u>

The PAMs developed in Hamilton-Wentworth Vision 2020 project addressed most of the features of sustainability (as defined by the 12 common features of community sustainability – see Appendix

II). For many of the features, however, the targets were qualitative in nature, rather than quantitative. Qualitative "targets" are directional in nature, recommending only whether the indicator should increase or decrease from the 1993 baseline. Table F summarizes a number of selected baselines, indicators and targets.

Table F: Indicators, Baselines and PAMs for Hamilton-Wentworth's Vision 2020

Feature	Indicator(s)	Baseline (1993)	Target (2020)
Ecological Protection	Environmentally Significant Natural Areas protected - Hectares	<1000	23,000 (all)
Transit-Supportive Urban Design	NA	NA	NA
Urban Infill and Village Centres	Hectares of agricultural land lost due to Official Plan Amendments	41	0
	Number of housing starts in downtown Hamilton	NA	Increase
Healthy Local Economy	Percentage of residents over age 15 within population in the labor force	65	Increase
Sustainable Transportation	Transit ridership in rides per year per person	55	100
	Number of Cars per Capita	0.8	Decrease
Affordable Housing	NA	NA	NA
Liveable Community	Number of "All Beaches Open for Swimming" Days (June 1 – September 1)	50	92
Low Impact Sewage and Stormwater Treatment	Kg per day total loading of nitrogen into Hamilton Harbor	5,600	350
	Kg per day total loading of phosphorous into Hamilton Harbor	159	60
Water Conservation	Cubic metres of total water consumption	1040	521
Energy Efficiency	Average annual residential electricity consumption in KWh	11,150	Decrease
The 3 R's	Annual kgs residential waste generated	204,833	Decrease
	Percentage of waste recycled or composted.	9	Increase
Better Planning	NA		
Other	Annual number of O_3 (Ground Level Ozone) criteria exceedances	350	Decrease
	Average SO_2 concentration in parts per billion	6.2	Decrease
	Average number of PM10 (Inhalable Particulate Matter) criteria exceedances	NA	0

Note: Only selected indicators and targets that reflect the 12 common features of sustainable community development are included in case study tables. NA – not available.

Process

In addition to soliciting public feedback through the use of workbooks, the processes for the development of the targets fell into four general categories:

- Those already available from other sources (e.g., Remedial Action Plan) that could be researched and adapted, or used directly.
- Those derived from benchmarking against other cities.
- Those developed as a result of consulting with experts in selected theme areas, (e.g., low birth weight targets developed through consultations with the Regional Health Department).
- Those that could not be quantified and that were developed by the Project Team as qualitative or 'directional' targets (i.e., increase or decrease).

The first process for establishing targets was straightforward. It consisted of selecting targets that came from local and regional policy and planning initiatives. Two existing initiatives from which Vision 2020 derived targets were a City led project on water quality improvement in Hamilton Harbour and a project designed to improve the use of public transit. The associated targets already had solid background research and the projects were both relevant to implementing Vision 2020. Another approach to targets setting involved benchmarking. This involved examining targets established in other cities with similar conditions to Hamilton-Wentworth, and then adopting or modifying their targets to regional circumstances.

The third approach to developing targets involved the use of experts. These targets required more in-depth research to get the right kind of information to form the targets and establish baselines in order to monitor and report on progress. For example targets regarding birth rate required more in depth knowledge than was available among the Project Team, or that could be derived from the results obtained through the workbooks. Experts from both McMaster University and the Regional Health Department became directly involved in setting both indicators and targets. Experts from the Ministry of Environment, the City Planning Department, and from the Department of Social Services were involved in development of targets in other areas such as Environment, Land Use and Public Safety and Security. Like participants from the general public, experts were given the workbook that was used as an initial step to develop both indicators and targets in each of their areas of expertise. This stage was followed by formal and informal interviews with experts undertaken by the Vision 2020's Project Co-ordinator. The Project Co-ordinator was charged with making sure that there was some consistency between the themes of Vision 2020, the indicators and the targets set with expert input.

The fourth type of target setting did not involve quantification. Instead, qualitative 'targets' that generally indicated the desired trend in the data were established. The reasons why some indicators had no quantified target varied. In one example under the theme, "Improving Air Quality", the City was already working on a plan to improve air quality but no specific targets had yet been developed. In this instance, the Project Team felt that it would be sufficient to state a desired positive trend and to wait for a quantified target. In another example, the data to support the selection of specific targets was unavailable. Instead of eliminating the indicator due to lack of quantifiable targets, a positive or negative trend was chosen as a 'target' until adequate data could be obtained. Finally,

some of the indicators selected did not lend themselves well to a quantitative target setting, evaluation and reporting.

Vision 2020 has been subject to annual reporting including investigation of the relevance of indicators and targets since the first background report "Signpost on the Trail to Vision 2020" was published in 1998. In 1999, after the first report, a number of indicators were reviewed and either eliminated or reworked. In some cases, new policies were set into motion due to the recommendations in the 1998 report. The work that would follow these new policies would often bring changes in indicators and targets, such as in the area of transportation. As a result of the 1998 recommendations, a new transportation plan for public transport have been under development since 1999 which is likely to have an affect on related indicators and targets.

In other cases, indicators were dropped because data sources were insufficient, as is the case with indicators that depend on census data. Since Census data is only available every five years, it was not feasible to measure changes annually. When indicators were revised, changes to related targets were also made. Indicators that did not have data that could be collected annually are referred to as Supplementary Indicators that may be reported on in the future. Examples of some of the indicators that were removed form the 1999 report were "Total Length of Hiking Trails", "Amount of Road Salt Used on Regional Roads" and "Office Vacancy for Downtown Hamilton". Examples of other indicators that were replaced with new ones were "Level of Suspended Solids into Hamilton Harbor", "Number of Good or Very Good Air Quality Days per Year" and Annual Users of Hazardous Waste Depot".

Uses

Hamilton-Wentworth's performance assessment program has helped to operationalize its Vision 2020 for the Region. Annual reports that communicate progress toward targets provide a snapshot in time and helped to mobilize the community in moving towards achieving the vision.

Interviewees expressed different opinions on how the targets affected decision making in the municipality. One of the interviewees did not find that the targets had any direct impact on how decisions were made nor did they think that the targets really enhanced the usefulness of the indicators. Other interviewees stated that there was a lose link between targets and subsequent decision making, suggesting that the targets had influenced decision making at both the political and community levels. On the political level the annual release of the report was 'good press' which would often result in the politicians asking staff questions and wanting clarification around indicators and targets. This would often lead to either a revision or support of existing programs and policies related to Vision 2020.

At the community level, decision making changed because the Annual Report resulted in the formation of citizen groups as watchdogs to ensure political and bureaucratic accountability. Since the public had played an important role in establishing the indicators and targets, many members of the public were able to support the data in the report or highlight missing data. This was, for example, evident in data related to an issue area like "Natural Areas and Corridors" that had commanded significant local attention and interest. Faulty or missing data would be brought to the

attention of the Project Team that then considered corrections in the area for the following year's report.

The targets also played an important role in getting the attention of the media. The media prefers to have some quantifiable targets to report on and the targets made the Vision 2020 initiative much more tangible. Targets were an important tool in respect to awareness building. In terms of decision making the media attention also forced the Vision 2020 Project Team to explain how they had developed the targets, resulting in greater legitimacy. This created pressure for more clarity and accuracy around the target setting process.

An important use of the targets cited by an interviewee involved their role in creating awareness and political support for new policies. For the Project Team, the targets were important in assessing how well they were doing in moving ahead towards the vision. They provided a good picture of which policies and programs seemed to be working well in meeting the targets and which did not. This made it easier to isolate and improve a potential problem. Targets made it easier to work on policies and programs around Vision 2020. The targets also helped to focus on key community issues. For example, The goal for the 1998 "Air Quality on the Ground Report" was to ensure the region the best air quality of any major urban area in Ontario. This goal combined with the related indicator data helped make air quality become an important issue for City Council in 1999, resulting in an air quality plan.

Overall the targets have played a direct and indirect role in creating a better awareness about and understanding of Vision 2020. Even though many targets were of a broad and general character, the targets still made the project more tangible and facilitated a better communication on a political level as well as on a general community level.

Problems

Getting local business interests involved in Vision 2020 was one important challenge facing the project managers. When invited to put forward their expectations of the project, local businesses would rarely respond. One explanation for this is that Vision 2020 focuses primarily on environment, social and cultural issues. The opinion of many Vision 2020 participants was that there had already been plenty of focus on projects and studies to improve the local economy with many indicators available. As a result, it was argued at that time that Vision 2020 would not be adding much value in this area. Hence, the Project Team only proposed one indicator for Local Economy, which was related to the rate of participation in the labour force. Hence, subsequent work did not sufficiently engage the business community.

Another challenge was in ensuring the credibility of the targets. One interviewee pointed out that the targets might be vulnerable to criticism in terms of feasibility, and that this could undermine the whole Vision 2020 project. It is important to ensure that targets are relevant, comprehendible and accepted by the community as a whole. Building legitimacy is an important objective.

A general problem was finding the proper level of community involvement in developing and setting the targets. Some indicators and targets required expert knowledge. In these cases, it was difficult to get the desired level of community participation, since members of the general

community were not qualified to make a useful contribution. At the same time, some of the indicators did not get the expert attention they really needed in order to set the appropriate targets for the Region.

Overall, the Project Team found it challenging to reach a consensus when setting the targets and conflicts were experienced between what was realistic, achievable and desirable in both the eyes of experts, the Project Team and politicians. Some Vision 2020 participants favoured non-quantifiable targets, as they feared that setting out to establish hard and fast targets would engender conflict and put the project at risk. Others accepted the need for quantified targets but wanted to maintain flexibility in being able to adjust both indicators and targets over time, as new data and social issues emerged. These different perspectives made target setting a difficult process and made it hard to get too specific in the setting of targets for many indicators.

Lessons Learned

Vision 2020 faced many challenges and changes over the years since 1993 and a number of lessons can be drawn from this experience. First is the need to keep one's overall perspective intact when developing indicators and targets. Too often indicators and targets are developed with little thought as to which role they will play in the overall policy development and implementation. Without tying indicators and targets properly into an overall vision and developing strategies for implementation, the actual targets can become meaningless and ineffective.

It is also important to find a proper balance in the target setting. They should not be too easy to achieve, since this might compromise the legitimacy of the target. On the other hand they should not be too hard to achieve, since this might undermine the credibility of the entire project. If the development of a target is undertaken as part of policy development or objective setting, utilizing a broad consultative process, it has a higher chance of being accepted.

Accept the fact that over time, it will be necessary to revise indicators and targets because of ever changing circumstances. Setting targets and indicators is part of a continuous process. As a result it is desirable to be flexible in order to adjust and change when necessary. In this regard it is important to keep the selection criteria for setting indicators, (mentioned in the beginning of the case study), in mind when revisiting indicators and targets in order to ensure continuity between changing indicators and their associated targets.

Another important lesson is that local data sources should be favoured over those under the control of other jurisdictions for baseline monitoring. It was found that in cases where outside data sources were being used, access to those sources could change very quickly - especially in cases where a new government decided that a data source was too expensive to generate or maintain. The most reliable data sources are sources that are under direct control or influence of the regional government.

Sustainable Okotoks – Okotoks, Alberta

Case Identification

Okotoks is a town located about 40 kms south of Calgary. In 1997 Okotoks undertook a sustainability initiative that resulted in the adoption of a new community plan the next year. The plan contains a number of sustainability targets related to growth management, quality of life, and environmental quality. Policies and programs to meet the targets are currently being implemented.

Context

Okotoks is rapidly growing town of 10,000 people within the Calgary Census Metropolitan Area (CMA) with an above average family income level and a high quality of life. With an average population growth of 5.5 per cent per year in the previous ten years, town managers were aware in the mid-1990s that strategic decisions about growth were going to have to be made in the near future.

The main driver for the planning process that culminated in the adoption of a new Municipal Development Plan (MDP) was the issue of the Okotoks''s wastewater effluent. The treatment plant is certified by Alberta's Environment Ministry and provincial regulations limit the amount of effluent going into the Sheep River.

The existing treatment plant technology would have required a population limit of 15,000. By using advanced technology (multi-sequential batch reactor) Okotoks believed it could reach a population of about 25,000, while remaining within the provincial limits for effluent loading on the Sheep River. Beyond this, however, it would have had to plan for regional infrastructure, which would be expensive.

A management group was set up in 1996 to discuss issues related to Okotok's growth and to undertake a public consultation that would lead to the adoption of a new Municipal Development Plan. The group consisted of Okotoks' economic development officer, the town manager, the manager of infrastructure services, and the head of the planning department.

In order to get a snapshot of the aspirations of existing residents with respect to their community, the management group conducted a survey in 1997. The 13-page survey was hand delivered to every household in Okotoks. Residents were asked to respond to questions relating to the quality of life in the town, municipal services, and other key issues.

About 1,000 of the 3,000 surveys distributed were returned. The themes identified by residents included the desire to maintain a small town atmosphere, a sense of personal safety, a pristine river valley and a good school system. Essentially, residents said that they appreciated existing conditions Okotoks and wanted to protect them from rapid change.

Working with the results of the survey, the management group elaborated a sustainable vision for the town, called "Sustainable Okotoks", and presented this vision along with a "business as usual" scenario at community meetings. The business as usual scenario was based on the assumption that

the town would continue to grow at historic rates, basically without limit. The sustainability vision was based on the assumption that population growth would be kept within local ecological limits based on the Sheep River's ability to manage treated wastewater.

A second survey was conducted as part of the Community Development Plan process by inserting questionnaires into residents' utility bills. Residents were asked whether they agreed with the notion of capping population growth based on the 'carrying capacity' of the area. This two-page survey resulted in over 400 responses. Seventy-three per cent of the survey respondents favoured limiting the town's boundaries, 80 per cent favoured planning based on the watershed limits of the Sheep River, and 83 per cent said that Okotoks should refuse development if it did not comply with sustainable design principles.

As a next step, Okotoks held open houses and independent consultations with major developers. When formal public hearings were conducted on the plan, not one person spoke against it. Three of four major developers in the area sent representatives to signal their approval of the plan.

In September 1998, the Municipal Development Plan was officially adopted, embodying concepts such as local watershed carrying capacity, the notion of "growth with limits", and a number of other sustainable commitments including mixed land-use, creating places of employment close to people's homes, and ecological restoration. Most of these commitments involved the use of quantitative targets as described in Table G, below.

Performance Assessment Measures (PAMs)

The MDP contains about 30 targets that relate to the various elements of the MDP. Some targets do not relate to the sustainability categories being used for the present research, such as those concerning the portion of municipal infrastructure to be paid by the development or business community. However, most of the 12 common features identified in the model are covered by the MDP. Notably absent are any targets related to transit, which reflects the absence of a public transit system in the community. Also absent are targets linked to the 3 Rs. Baseline information for most of the PAMs was not contained in the MDP. Three target dates were used in the plan, a shorter-term one (2005) a longer term one (2010) and an unspecified one relating to the ultimate build out date. The table below summarizes the relevant information from the MDP.

Table G: Indicators, Baselines and PAMs for Okotoks

Feature	Indicator(s)	Baseline	Target 2005	Target 2010	Target Build-out
Ecological Protection	Percentage of tree replacements completed	NA	50	100	NA
	Environmentally significant lands preserved	NA	95	NA	NA
	Percentage of lands identified as requiring restoration to a natural state restored	NA		100	NA
	Percentage of identified tree replacement completed	NA	50	100	NA
	Percentage of un-vegetated boulevards capable of sustaining planting that are planted	NA	50	100	NA
	Percentage of gross land area within the Town available as public open space and pathway systems	NA	20	NA	NA
Transit-Supportive Urban Design	Overall housing density in units per gross hectare	NA	NA	NA	Maximum of 11.5
Urban Infill and Village Centres	NA	NA	NA	NA	NA
Healthy Local Economy	Percentage of assessment base in commercial/industrial use	88.3% in 1998	NA	NA	78% in 2013
	Percentage of residents working in Okotoks	40% in 1998	NA	NA	60% in 2013
Sustainable Transportation	Maximum walk time in minutes between any given home and available industrial or other commercial employment cell	NA	NA	NA	20
	Maximum distance in metres between any given home and the nearest off- street pathway system	NA	NA	NA	300
	Maximum walk time in minutes between any given home and the nearest commercial shopping cell	NA	NA	NA	20
	Maximum walk time in minutes between any given home and neighbourhood recreation or facility opportunity in new cells	NA	NA	NA	15
Affordable Housing	Percentage "non- traditional" forms of housing of total housing stock.	17	NA	NA	30
Liveable Community	Install facilities	NA	NA	NA	NA
Low-Impact Sewage and Stormwater Treatment	Population that can be served by infrastructure	10,000	NA	NA	25,000 - 30,000
Water Conservation	Percentage of municipally owned lands that are xeriscaped	NA	10	25	NA
	Gallons of water used per capita per day	NA		63	NA
Energy Efficiency	Percent reduction in municipal $C0_2$ emissions	NA	20	NA	NA
The 3Rs	NA	NA	NA	NA	NA
Better Planning	NA	NA	NA	NA	NA
Other	Maximum build out population	NA	NA	NA	25,000 - 30,000.
	Percent of the population residing north of the Sheep River	NA	NA	NA	50

NA – not available.

A couple of these targets bear comment. The planned density target is in fact the current gross density in the town and therefore does not represent any change from a sustainability point of view. The target was kept at its current level in response to the clearly expressed desire of residents to

maintain the existing character of the community. However, where desirable on planning and economic grounds, densities will be allowed to increase in particular areas if water conservation measures are put in place and total water consumption does not exceed that which would have occurred at the maximum density threshold.

The target related to non-traditional housing was also controversial because developers and builders in the town are used to creating single-family detached housing. Non-traditional housing will require them to build villas, townhouses, multi-unit buildings, and so on. They also resisted this target on the grounds that it is impossible to predict what the housing choices of residents will be 20 years from now.

Process

Quantitative targets were incorporated into the planning process from the visioning stage onward. The original set of targets was developed early on by the management team in consultation with the Okotoks' Town Council. No consultations on the original targets were held with outside experts or with stakeholders. Nor was the Okotoks' development community directly involved, although they were consulted as the PAM development process unfolded. They appear to have considered it a fair process.

Although the management group did not undertake an exhaustive search for precedents in other North American jurisdictions, they were aware of several relevant initiatives, the most important of which was the Southeast False Creek planning effort (see the case study on this initiative in this volume). The management group found that the relevant precedents were too complex: they wanted a simpler system that could readily be explained to a busy, non-technical audience (i.e., the public).

Okotoks' performance target system revolves around one key target – the population at build-out (see Figure 3 below). The targeted 25,000-35,000 people matched the maximum capacity of the sewage treatment plant and coincided with the "highest and best use" (which every municipality in the province has a legal obligation to foster) of land within the existing town boundary. However, a higher target could have been set if the town was ready to invest in new regional services and to annex surrounding lands for greater growth. Thus, this target reflects a complex set of variables including technical limitations of municipal infrastructure and regulatory requirements set down by the province, along with the expressed political preferences of existing residents.

Other targets flowed from the population limit. For example, the water conservation target is based on a combination of the population target and the water withdrawal limits from the Sheep River, i.e., for that many people to live in this area, water consumption would have to be reduced by the targeted amount.

Other targets were based on 'gut feels', such as the target for the percentage of residents working in Okotoks. No formal study of commuting patterns in other municipalities was undertaken to justify this target. In contrast, the target for the percentage of local assessment from employment lands was based on a comprehensive study of Alberta averages and an educated guess as to what would be attainable for a town with Okotoks' characteristics.

The management group was careful to ensure that the targets were mutually consistent. For example, the commuting and employment base targets are thought to be roughly consistent, as are the population, water treatment and conservation targets. Where one target would have been inconsistent with other targets it was redefined to ensure consistency. For example, some thought was given to setting a target of 30 per cent "affordable" housing. In discussing this target, however, it was realized, that affordable housing is usually higher density than existing housing forms and that this would mean that future development would exceed the "stay the course" density target. Thus, the target was changed to 30 per cent "non-traditional housing", which allows for larger as well as smaller lots.

Uses

The targets serve both as a long-term vision and an important operational guide to the day-to-day decision making of the Town. As a reflection of a community vision, the targets are at the core of the Town's long range planning documents, including the Municipal Development Plan, and the inter-municipal development plan (undertaken with rural municipalities adjacent to the town).

As operational guidelines, the targets assist the Town in discussions with developers over specific development proposals. The targets are supposed to be reflected in the subdivision and site development plans that result.

The primary motivation for developing a system of performance measures and quantitative targets appears to have been the potential for capturing the community vision in an actionable way and for communicating in a direct and simple way the development direction the town intended to move. Thus, the targets are used as key communications tools and appear prominently in town publications such as the bi-annual community reports (1998, 2000).

Finally, the targets are also used in the two-way communication process among elected and non-elected officials. The targets, for example, are used in making recommendations on development or other policy matters to Council, i.e., to ensure that Council decisions reflect the broader sustainability vision.

Problems

Although developers appear to support the overall approach involved in the Sustainable Okotoks program and the performance targets in particular, the system may introduce some uncertainties into the planning and development process. This is ironic given that the system was adopted and is promoted by the Town as a way of identifying and moving towards a desirable future rather than leaving development up the vagaries of the market place. The developer interviewed for this research suggested, however, that having ambitious targets is a double edge sword – on the one hand it gives measurable goals around which there is a broad consensus, while on the other hand, if the goals are too ambitious then it may create uncertainty about the community's ability to achieve them. Uncertainty can undermine the willingness of key stakeholders to incorporate the targets into their decision-making, which in turn undermines confidence in the targets and diminishes the likelihood that they will ultimately be realized in practice.

This seems to be the case with the water conservation target. Developers fear that the ambitious target may be unattainable given that the Town is already one-third the way to its build-out size. In order to address issues such as this, one interviewee suggested that that the targets be reviewed and revised (with developer involvement) on a periodic basis, perhaps every three to five years.

The Town recognized that there may be some technical problems in monitoring and reporting on the targets. For example, the Town discovered that the 20 per cent greenhouse gas emissions reduction target is difficult to measure if it is interpreted to mean total emissions within the geographical area of the town, from vehicles, home heating and so on. Should it, for example, include emissions due to electricity consumption even though the production facilities are out of Town? Should it include emissions from cars traveling through the town to other destinations? To simplify definitional and measurement matters, the town elected to focus on its corporate emissions only and have adopted several programs to move towards the target.

There is also a question of the resources needed to track the measures and report on changes. The Town's 2000 Community Report dealt with only 10 of the 30 or so targets contained in the Municipal Development Plan. The interviewee from the management group indicated that the town lacks the "horsepower" to do a comprehensive job of monitoring progress on the performance assessment measures and suggested that provincial or federal assistance might be necessary to do an adequate job. Because of the resource commitment implied by the adoption of quantitative targets, it is unlikely that the Town will expand the range of targets contained in its public documents: however they do plan to develop more targets and use them internally for operational purposes.

In some cases, it may be that the various uses to which the target system is put give rise to contradictions. For example, a target may be selected for purposes of simplifying public communication on a topic and building public support for a specific policy direction. However, the use of such a simplified performance measure may not be desirable from an operational point of view when, for example, negotiating with developers. This seems to have been the case with respect to the housing stock target: it is a simple goal that people can understand but which developers find too narrow in the face of changing market realities.

Finally, there is the issue of political realities and the choices made by local politicians. Although the target system can help provide some consistency of purpose as politicians come and go over the years, it is also vulnerable to the vagaries of the political system. Politicians may endorse targets in principle but fail to make the "hard choices" needed to implement them in practice. This is especially apparent with respect to the more controversial targets, i.e., those that relate to urban design and neighbourhood character. Developers are sometimes reluctant to experiment with new housing forms and local elected officials may be reluctant to antagonize them by insisting on models that have not been widely tested in the market place or accepted in the wider community (e.g., multi-family units).

Lessons Learned

The astonishing thing about the Okotoks case study is that although the targets chosen were not extremely well substantiated, they were never challenged in public and no dissenting voices were raised. In other words, the management group was extremely successful in seeing through a targets-

based planning process despite limited financial and staff resources (only one staff position was created to oversee the whole planning, target setting and monitoring process).

The case highlights the importance of locally-tailored solutions. The outcome reflects the fact that the targets were chosen to adapt sustainability concepts to local political, economic and social conditions. For instance, setting gross density targets substantially higher than the existing level (as suggested by most sustainable development literature and our own conceptual framework) would have dragged the whole exercise down into endless debate and public resistance. Seeking tradeoffs, such as the target for non-traditional housing, which allows both larger and smaller lot development, was another way of building support for, and avoiding debilitating local controversy over the initiative.

Another success factor that could be attributed to the management group was the decision to leverage some not-so-popular targets against other, more popular targets. For instance, by linking the water conservation target, which was not popular among developers, to the population growth target, which was unanimously supported by developers, the Town was able to get the 'buy in' of the development community.

Conditions in the community also favoured success in this case. First, Okotoks has a higher income population that moved to the Town for its environmental qualities and existing landscape character. These people did not have to be convinced of the desirability of environmental protection. Secondly, the town does not have a strong business sector, which might have otherwise protested against the proposed limits on growth. Existing business are small scale, and in fact, supported growth limits because they saw it as a way of avoiding competition from large scale, 'big box' retailers who might have been tempted to locate in the town under a business-as-usual scenario. Thirdly, the largest developer in the area (Genstar) happened to have all its development lands within the town boundary and therefore did not resist the decision not to seek annexation of surrounding areas for urbanization.

These observations suggest that replicating this target setting process in other municipal contexts (i.e., under other conditions) might be difficult - although the notion of establishing locally significant targets, based on infrastructure, ecological conditions and community desires, is informative.

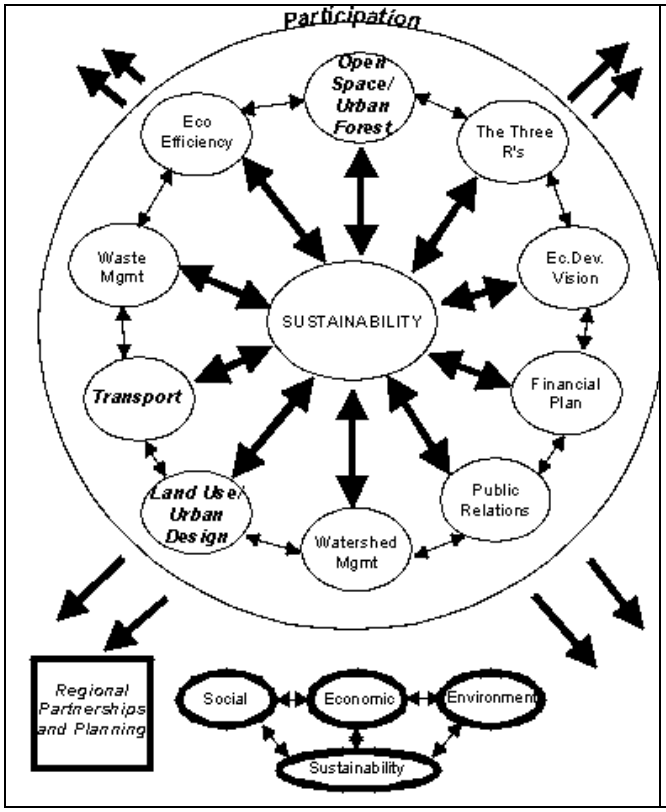

Figure 3. A Sustainable Okotoks Approach
This applies to all facets of municipal operations – from planning to recycling to public education to water conservation: land use/urban design; transportation system; open space/urban forest; regional partnership and planning.

Sustainable City Program – Santa Monica, California

Case Identification

Santa Monica is a mid-sized city with a population of about 94,000. It is 20 kms from Los Angeles and has a very high average income. The city is considered very attractive from a liveability point of view and prides itself on its progressive environmental policies. The City has adopted a series of 15 indicators and targets within the context of its Sustainable City Program.

Context

The Santa Monica targets were adopted as part of the City's Sustainable City Program. The program was initiated in 1991 when City Council appointed a Task Force on environmental policy made up of local experts (i.e., academics, directors of local environmental NGOs, and consultants) with a mandate to provide input to council on environmental policy. After conducting a six-month review, the Task Force found that the city was doing well on some things, but that it had a piecemeal approach to the environment. This resulted in gaps in the policy framework and, in some cases, contradictory polices. Council then directed the Task Force to develop a policy framework that could be used for a more comprehensive approach to environmental issues.

For inspiration, the Task Force turned to the concepts of sustainable community that were then emerging as part of the discussion around local Agenda 21.

The result was the Sustainable City Program, adopted in September 1994. It was based on the following guiding principles:

- The concept of sustainability will guide City policy.
- Protection, preservation and restoration of the natural environment are a high priority for the City.
- Environmental quality and economic health are mutually dependent.
- All decisions have environmental implications.
- Community awareness, responsibility, involvement and education are key elements of successful programs/policies.
- The City recognizes its linkage with the regional, national and global community.
- Those environmental issues most important to the community should be addressed first and the most cost-effective programs and policy should be selected.
- The City is committed to procurement decisions that minimize negative environmental and social impacts.

The Sustainable City Program focused on four major policy areas, each with its own set of targets and City programs designed to achieve the targets.

- Resource conservation (including solid waste, water, wastewater, and energy).
- Transportation.
- Pollution prevention and public health promotion.

❖ Community and economic development.

Performance Assessment Measures (PAMs)

Table H, below, contains baseline and target information for each of the original 15 indicators. The targets refer to a city-wide objective, including private and public actors, unless otherwise described as a target for the City as a municipal corporation. Thus, the targets represent the potential of the City to become sustainable in its own operations as well as promote sustainability in the community as a whole. The target year is 2000. For most indicators, a 1990 baseline was developed. Interim targets were also set, but are not shown on the following table. A reporting schedule was laid out in the original program, including the need for periodic reviews of the program and a report on progress. Reviews were undertaken in 1996 and 1999. Some of the indicators and targets were revised (not shown in table) as a result of the periodic reviews and it is anticipated by the program managers that further revisions will take place in the future.

Table H: Indicators, Baseline and Targets for Santa Monica

Feature	Indicator(s)	Baseline (1990)	Target (2000)
Ecological Protection	Acres of public open space.	164	180
	Number of trees in public spaces.	28,000	28,350
Transit-Supportive Urban Design	NA	NA	NA
Urban Infill and Village Centres	NA	NA	NA
Healthy Local Economy	NA	NA	NA
Sustainable Transportation	Millions of riders per year on Santa Monica buses.	19.0	20.9
Affordable Housing	Number of publicly-assisted affordable housing units created per year.	1172	1922
Liveable Community	Number of community gardens.	2	5
Low-Impact Sewage and Stormwater Treatment	Millions of gallons per day of wastewater flows.	10.4	8.8
	Gallons per day of dry weather stormdrain discharges to the ocean.	500,000	200,000
Water Conservation	Million of gallons per day water used.	14.3	11.4
Energy Efficiency	Millions BTUs per year used. **	6.45	pending
3Rs	Tons per year of landfilled solid waste.	124,000	62,000
	Percentage recycled content of city office paper.	NA	50
	Average vehicle ridership of employers with over 50 employees.	NA	1.5
	Percentage of city fleet vehicles using reduced emission fuels.	NA	75
Better Planning	NA	NA	NA
Other	Per cent reduction in city-wide use of hazardous materials.	NA	15
	Per cent of known underground storage tanks requiring cleanup.	NA	6

** Refers to overall energy usage (electricity and natural gas) from all non-mobile sources. Original baseline and target for this indicator were based on incorrect data. A new target is currently being developed. NA – not available.

The table shows that no targets or policies were adopted concerning compact urban form or transit-supportive design. According to one interviewee, these elements of sustainability were considered too controversial for inclusion in the program. Although the Task Force had discussed these issues

internally, the consensus was that if they crossed into planning issues (density, urban form, traffic) they would encounter roadblocks from the Planning Department (considered quite powerful) and the whole program could be delayed or jeopardized.

Process

The idea of using targets originated with the Task Force. Although sustainability initiatives in other cities (such as Chattanooga, Jacksonville, Olympia, Curitiba, and Seattle) did include the use of targets, the Task Force was not aware of any city using them in conjunction with measurable targets. Nonetheless, Task Force members felt that indicators *and* targets were necessary to make progress – so they sat down with staff and proposed a set using the following criteria:

- The target reflects something fundamental to the long-term economic, environmental or social health of the community.
- The target is statistically measurable – either data exists or a practical method of data collection can be created.
- The target represents something that can be influenced by community and government actions.

Four different methods were used in developing the indicators and targets:

- In some cases, targets were chosen to reflect existing adopted or mandated goals, such as the target for land filled solid waste, which is mandated by state law.
- In other cases, the targets chosen reflected established or informal City departmental goals. For example, the transit ridership target (20% over baseline) reflected the Transportation Department's pre-existing goal.
- Some targets were chosen that simply appeared to the Task Force and city staff to be aggressive yet realistic and achievable. In these cases, some rudimentary analysis was performed in order to assess the potential for change and the related costs and benefits. For example, the water conservation target (20% reduction from baseline) was felt to be aggressive but achievable based on an analysis of the results of existing water conservation programs in Santa Monica and elsewhere and the anticipated impacts of planned programs. For this target, a consultant was retained to do a simple cost-benefit analysis of the various water conservation options open to the city.
- In those cases where the Task Force did not have data, they did a "best guess" with the understanding that the target could be revisited in the future.

Regardless of the approach taken, the cost of achieving the targets was taken into account. However, in some cases, like the low-emission fuel target for the City's fleet, the cost issue was noted but not made a priority because the City had to act in order to address regional air quality issues.

As this description of the process makes clear, the targets were developed as an exercise among community experts and city staff – there was little or no public input. Following this in-house start, a public process was undertaken that lasted about 18 months, resulting in some minor revisions to the proposed targets and the addition of further targets. There was little controversy about the program, the target setting approach, or the proposed targets themselves.

The Sustainable City Program and the associated set of targets were adopted by City Council in September 1994. After the adoption of the indicators and targets, city staff turned their attention to acquiring the baseline data and methodologies with which to measure progress towards the chosen targets.

Uses

Because the targets employed by the City were such a major element of the SCP, it is difficult to untwine the two from a uses and benefits point of view. The SCP was designed to act as a guiding vision for the city, and the targets allowed that vision to be clearly and simply stated in such a way that it could be understood and acted upon by people throughout the City government and in the community at large. The program and the associated targets were developed as an instrument to unify and integrate effort on sustainability issues in the City.

The main "targets" of the program were the senior officials in the City bureaucracy. The designers of the SCP reasoned that City environmental governance was piecemeal because some department heads were "on board", while for others sustainability was not "on their radar screen". By adopting this framework, the City was sending a signal that this was the new culture and departments were expected to meet the targets. As one interviewee put it: "When you have numbers, programs have to be developed in order to achieve those numbers. The targets create responsibility on part of elected and non-elected officials towards meeting them - its what has driven policy changes and created progress."

An example of the type of changes wrought by the approach used in Santa Monica is offered by the City's experience with transit ridership. When a review of ridership was conducted in 1996, it was found that despite the target for a 20 per cent increase in transit use, ridership was actually dropping. In response, City Council directed the head of the City Transportation Department to address the problem. They introduced improvements in the transit system, which had the desired impact of improving ridership by the targeted amount since 1997.

Another use of the targets was to increase public interest in sustainability as a general concept. Unlike some other cities that have adopted sustainability programs, the Santa Monica program was not triggered by some environmental crisis. Thus, there was little sense of urgency among residents or business people and public interest in "sustainability" has been weak. However, the existence of targets and periodic reports on progress towards them has raised some interest in the topic within the media and the broader community.

The targets have also been useful in negotiations with local developers. For instance, the City requires as part of the development agreement that developers build on site treatment of wastewater so they do not increase the flow of water going to treatment plants. The housing department uses the targets when negotiating with developers over housing mix in new projects. The targets have also be used to justify new fees or taxes, such as water demand mitigation fees, which go to water conservation programs.

Problems

The implementation plan of the SCP called for periodic progress reports by the Task Force. The first report, in 1996, found that although progress had been made on specific indicators, environmental policies were still being implemented in a piecemeal fashion. The Task Force found many city staff were unaware of the program, and that most who were aware did not see implementation of the SCP as a priority. Staff responsibility for implementing the program had not been defined and the necessary funding had not materialized.

In order to help address this negative assessment, the City developed the Sustainable City Performance Evaluation Guidelines, covering all job classifications in the department. The guidelines are used by supervisors during annual performance evaluations to highlight sustainable policies as they relate to each position and to encourage employees to work on specific points before their next review. In addition to these guidelines, the City Manager includes effectiveness in meeting SCP targets as one of the criteria for his annual performance evaluations of *all* city department heads. This has proved effective in raising awareness about the program and associated targets among senior management staff.

When the SCP was adopted in 1994, it had no legal weight – a future council could simply cancel it and no citizen could sue the city for not implementing the program. Thus, the Task Force wanted to give the program legal weight by incorporating it into the City's General Plan. The state requires each municipality to have a 10-20 year general plan that includes land use, circulation, housing, open space, conservation, noise and safety. Since 1998, the City has incorporated SCP goals and targets while updated the housing, open space and conservation elements of the plan.

In addressing the problems identified in the first progress report, the City also established the Sustainable City Program Coordinator. The position is within the Environmental Programs Division and provides consistent oversight of program implementation, outreach and evaluation and serves as a liaison to all city departments. The City has also embarked upon an outreach program to raise awareness of the SCP among the business community and city residents.

The second Task Force progress report, published in 1999, was much more positive, concluding that many of the obstacles to program implementation had been overcome.

Tracking progress on individual indicators also posed some difficulties. Certain problems were caused by the fact that the indicators were decided upon prior to the development of baseline data. In some cases, indicators were originally adopted that proved too difficult to track. For instance baseline data could not be obtained for the hazardous materials indicator so it had to be replaced with two other indicators that tracked City purchases of hazardous materials and generation of hazardous waste by City operations.

In other cases, indicators were found to be too sensitive to variables outside the City's control. This was the case for stormwater flow rates, requiring that the original indicator be replaced with one directly under the City's control. Some targets that depended on the behaviour of the public have not been that successful (e.g., solid wastewater usage reductions). Furthermore, some targets did not

take into account the growth in the City business activities or population, which rendered them unachievable.

As mentioned above, the need to achieve broad support for the SDP required that the program focus on less controversial issues. For this reason, the original program avoided setting target and policies that would challenge core values, such as access to low-density housing or the dominance of the automobile in personal transportation. This issue is being broached now in that the discussions between the Task Force and the City's Planning Department have begun and the result may be the adoption of new indicators and targets, such as jobs/housing balance and other planning related issues.

Also problematic can be the public reaction to achieving a fixed target: people may think that the problem is solved. When targets were expressed as city-wide goals (as many of the Sustainable City Program targets were), members of the public may not have appreciated their role in achieving them.

Lessons Learned

In this case study, there was little controversy about the targets approach, the specific targets adopted, or the SCP that formed the immediate context for adopting the targets. Under these conditions, it appears wise in retrospect that some targets were proposed with only limited (or no) technical or economic justification. As one interviewee put it: " we had to get the targets on paper and get the program going rather than spending time on perfecting the targets."

The success of the SCP and its target setting aspect points to the importance of getting full support for the program from senior officials within the city administration and from city councilors. Earlier success with the program may have been achieved if department heads had been more fully involved in formulating the principles and targets that made up the SCP. However, the cooperation of department heads was obtained after the fact (following the negative review of the Sustainable City Program in 1996) by linking the attainment of the targets to the personal goals of senior officials, and in particular their career goals.

The experts on the Task force saw their role as one of proposing a set of principles and targets that could then be debated in public and modified as necessary. The choice to work in isolation of public opinion in the formulation of the guiding principles, indicators and targets was criticized in the media. However, the participants interviewed for this research felt that this was the best path to follow given that the Task force members were working in a voluntary capacity and could have easily been "burned out" or side-tracked by an extensive public process. As it turned out, the Task force proposal was not broadly criticized when made public and few modifications were necessary.

The Santa Monica case also demonstrates that significant progress can be made with little direct expenditure. Most of the additional cost related to the formulation and implementation of the SCP was made up of the yearly salary of one mid-level official (the Sustainable City Program Coordinator). This cost was more than compensated by the savings from program implementation and operational efficiencies (e.g., energy efficient lighting and heating).

Another lesson that can be derived from this case study is that PAMs have a great impact on city politicians and staff, and less so on the general public. Thus, an in-house target setting exercise – if properly implemented – can help bring staff on side with a sustainability program, but will have little impact on the broader public unless it is accompanied by a major outreach program. Such programs can be expensive and this raises the question as to the feasibility of adopting ambitious targets that depend on dramatic changes in public attitudes and behaviour. Outreach programs can help to raise public awareness and change behavior over time.

Although the case seems to be applicable to many urban settings, there are specific conditions that helped promote the success of the SCP and the associated targets approach in Santa Monica. The City operates on a City Manager model, meaning that the day-to-day decisions are made by a City Manager with little political control. Political oversight is exercised in the adoption of general policies and evaluation procedures. Thus, it is the department heads that are generally held responsible for not meeting targets rather than the politicians. This governance model may help account for enthusiasm shown by city councilors for the target setting approach as it provided an unambiguous procedure for evaluating staff performance and calling them to account while leaving councilors relatively untarnished when targets were not achieved.

Another unique (or at least rare) condition in Santa Monica is the relative wealth of the population and the already pleasant environment in which they live. This allows the City to consider programs and approaches that poor cities might shy away from. Furthermore, Santa Monica's residents may have chosen the jurisdiction for its environmental qualities and be more likely to support environmental measures to preserve them.

Finally, target setting is not a guaranteed route to achieving sustainability in a given municipality or region. If the targets that are chosen do not represent fundamental issues of sustainability, then there may be improvement on specific environmental or social parameters, but the changes will not add up to the kind of deep changes desired by sustainability advocates.

Southeast False Creek – Vancouver, British Columbia

Case Identification

South East False Creek is a major infill development site in the central area of Vancouver, BC. It is composed of 80 acres of mostly derelict and contaminated industrial land and will eventually house between 4,500 and 7,500 people (see Figure 4 below). City Council has adopted an innovative vision and policy statement for the site, based on principles of social diversity, high density, mixed use, affordability, accessibility, and ecological protection. The project is now, at this writing, in its planning phase and construction is not anticipated for several years.

Context

In the mid-1990s, in response to regional concerns of air quality and goals of densification and family housing in the downtown, Vancouver City Council gave instructions to its Planning Department and Real Estate Services to begin planning a model sustainable urban neighbourhood with a focus on housing for families.

The planning began with economic feasibility studies in 1996. Development planning began in 1997, using a three-step process: Developing a Policy Statement, Creating an Official Development Plan, and Re-zoning the development parcels. Following these stages, development can begin as the market allows.

The South East False Creek Policy Statement was adopted by City Council in October 1999, following over two years of planning work, including the widest public involvement process ever undertaken for the Policy Statement stage of any single development in Vancouver. Step 2 is now the Official Development Plan that will locate buildings, streets, parks, etc. and ensure the intent and targets set in the Policy Statement are met. It will take several years to complete, and will ultimately be adopted by City Council as a bylaw, giving it legal status. The third and final step in the planning process is the rezoning of the site, into development parcels, with legal rights and responsibilities, permitted land uses, densities, and form of development guidelines attached to each parcel. These parcels can be then sold for development. The zoning and associated guidelines will ensure it is built as planned.

Following consultant studies and much public consultation, the City settled on an approach to sustainability, which noted that to be classified as “sustainable”, at the neighbourhood scale, Southeast False Creek needed to make a significant contribution to the larger goals of global sustainability, including:

- Promoting a healthy social community.
- Promoting a stable, diverse site and context economy, which assists all in meeting their needs.
- Reducing the consumption of non-renewable energy and resources.
- Reducing the production of waste and pollution.
- Enhancing the health of the environment, both locally and globally.

Bringing these essential goals to the table for every decision, helped give the planning team, stakeholders and the public, greater clarity on how to proceed in policy and design. These goals, in addition to many other more conventional city-building objectives, formed the basis for the creation of the policy statement.

Performance Assessment Measures (PAMs)

The 1999 Policy Statement outlines a vision and detailed policies to achieve one of the most holistic, high-density, sustainable, urban neighbourhoods ever planned in Canada. The policy statement contains a series of 26 targets, covering waste, transportation, energy, air, soil, water, open space, and building parameters. Although it was originally assumed that the Policy Statement would contain the performance targets, the decision was made by council to place the targets in the appendix of the document instead.

The targets were prefaced with the following statement: "These targets have not been adopted by the City, but can be referenced in discussion and during development planning to identify technologically feasible, but generally aggressive, levels of performance." It is assumed that the time-frame will be imposed by the development schedule followed for the site and that the targets refer to the final build out of the project. No reporting requirements were itemized in the Policy Statement. Baselines were not included in this performance assessment program, presumably because the current use of the site (i.e., non residential) is not comparable with the intended end use.

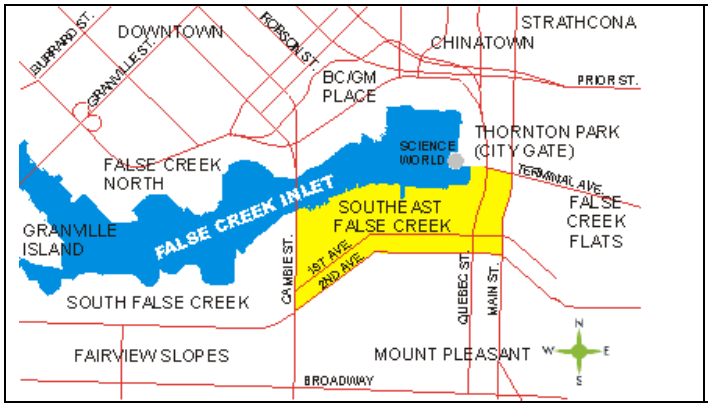

Figure 4: South East False Creek - location within the City of Vancouver

Table I: Indicators, Baseline and PAMs for Southeast False Creek

Feature	Indicator(s)	Baseline	Target (build out)
Ecological Protection	Number of species of birds for which habitat is provided.		At least 30
	Percentage of open space with significant habitat value.		60
	Percentage of roof area designed to carry plant life.		25
	Foreshore in SEFC with habitat value.		80
	Percentage of the produce consumed by SEFC residents that is grown on site.		12.5
Transit-Supportive Urban Design	NA		
Urban Infill and Village Centres	NA		
Healthy Local Economy	Km per year traveled by residents for daily shopping and commuting.		Maximum of 3,392
Sustainable Transportation	Percentage of dwelling units that are located within 350 m of basic shopping needs and personal services.		100
	Percentage of street area that is dedicated to walking, cycling and transit uses.		Minimum of 60
	Percentage of residential units that are located within 350 m of transit service.		100
	Kg per year of carbon dioxide that are emitted from transportation-related activity in SEFC.		Maximum of 1498
Affordable Housing	Percentage of dwelling units that are affordable to a population segment relative in income distribution and family size to those working in the downtown core and along the Broadway Corridor.		30
Liveable Community	NA		NA
Low-Impact Sewage and Stormwater Treatment	Percentage of the overall site covered in impervious material.		Maximum of 54
	Percentage of the sewage produced in SEFC that is treated on site.		25
Water Conservation	Litres of potable water consumed per person per day.		Maximum of 100

Table continued on next page.

	Number of kilowatt hours per year of energy from non-renewable sources that is used per m2 of floor area.		In multi-unit residential buildings, maximum of 288. In office buildings, maximum of 284.
Energy Efficiency	Percentage of the energy consumption that comes from renewable sources generated on site.		Minimum of 5
	Percentage of all buildings connected to a district heating system.		90
	Peak electrical demand of buildings in watts per m^2.		Maximum of 33
	Percentage of dwelling units and commercial spaces that have good solar orientation.		75
3Rs	Kgs per person per year of solid waste sent to disposal.		Maximum of 200
	Kgs per person per year of residential organic waste produced.		Maximum of 80
	Percentage of residential organic waste that is processed within the SEFC site.		100
	Percentage of the materials used in buildings that are salvaged, reused or have recycled material and components in them.		30
Better Planning	NA**		NA
Other	Percentage of buildings that are designed and built with basic features that minimize indoor pollutant levels.		25
	Number of strategies that are addressed to deal with contaminated soils in SEFC.		Minimum of 7

** It should be noted that although land use targets do not appear in the appendix mentioned above, the policy statement itself does incorporate density figures for the site. NA – not available.

The targets appearing in the appendix of the Policy Statement were drawn from a research report that had earlier been accepted by council, called Visions, Tools and Targets: Environmentally Sustainable Development Guidelines for Southeast False Creek.[1] This report was produced by Sheltair Scientific, a Canadian environmental consulting firm.

The Vision Tools and Targets report was innovative in several ways. Starting with general definitions and principles of sustainability, the report went on to translate those fairly abstract

[1] One of the targets from the Sheltair report was not included in the Policy Statement Appendix: the number of automobile kms traveled by residents of SEFC (3392 per year).

notions into ever more detailed and practical items that could be operationalized from a planning point of view. From principles, the report authors moved to planning categories (solid waste, transportation, energy, air quality, soil, etc.), suggested goals and objectives for each category, and then recommended appropriate targets and indicators for measuring their achievement.

For instance, under the goal of maximizing the diversion of all wastes from disposal, the report proposed the objective of "[reducing] and [managing] the generation of neighbourhood solid waste." It went on to explain why this objective was a priority, what indicators could be used for measuring it, as well as the previous policy initiatives already undertaken by the city and region. Furthermore, it also explained the sorts of strategies that could be used to achieve each objective, and offers an analysis of how to select indicators and targets to measure the community's future performance in waste management.

Process

The idea of using PAMs in planning the site originated with the Sheltair Group. Representatives from the consulting firm persuaded the city planning director to use the targets on the basis of the argument that it would provide a clear definition of what was meant by sustainability in the face of the many conflicting opinions on the topic. This approach offered to take the issue out of the political arena and into questions of performance and design.

After winning the contract to act as environmental consultants on the site, Sheltair set about to provide the City with environmentally sustainable development guidelines. The City created an Advisory Group of stakeholders including property owners, affordable housing advocates, environmental groups, and representatives from the City and a Technical Team of City staff. The Team met regularly to get feedback on the report as it developed.

At one meeting of the Advisory Group, Sheltair presented an idea that ended up serving as the framework for their report: a horizontal bar showing performance of other sites or cities in specific areas such as per capita waste recycling and water conservation. The framework allowed the participants to visualize the range of possibilities and to choose the desired targets in a broader context.

After drafting a target based on the precedents exercise, most were subject to more extensive analysis. Full cost accounting (comparing the internal and external costs associated with a policy measure to the benefits achieved from implementing the measure) was conducted on two objectives (transportation and solid waste). Integrated resource accounting was conducted on other objectives using a specialized method of end-use modeling of resource consumption, emissions, and costs for urban development.

Geographic Information Systems (GIS) mapping and area calculations were used to help with the targets related to land use. This required making assumptions about the breakdown of land uses for the site. Three land use scenarios were developed for this purpose: a reference case, an advanced case and a target case. The scenarios differed in the percentage of open space, surface permeability, habitat value, plant life, space allocated to cars and so on.

In developing targets, Sheltair made full use of the expertise on the firm's team and, when necessary, brought in knowledgeable people from other sources (e.g., from the University of BC or experts on the stakeholder advisory committee itself). They also consulted experts within the City bureaucracy and reviewed departmental reports to see what kinds of targets would be supported by City departments. Consultation with departmental heads was informal and periodic.

Although the target setting approach was welcomed by the Planning Department, the primary property owner on the site (the City Real Estate Department) was less enthusiastic. They gave little input as the targets were being elaborated. As it turned out the Real Estate Department's consultant did retain an expert from the US in order to assess and critically review the proposed targets.

A group of citizens and citizen organizations, known as the SEFC Working Group, strongly supported the target setting process because they believed it would hold politicians, civic officials and property owners accountable. Although they did not always agree that the numbers being proposed were sufficiently ambitious, they seemed to believe that once the targets were in place, they could be "ratcheted up" in the longer term. Sheltair was also active in building support for the targets in the broader community, by giving presentations to clubs and organizations such as the arts council and business associations. In general, press coverage of the targets setting process was favorable.

The consultation that took place around the target setting approach and the specific targets did not result in significant modifications to the approach or the targets themselves as the research unfolded. The public process was more about educating people as to the methods and benefits involved. This is not to say that the consulting team got nothing from the consultations: they used the consultations to identify where they needed to add more content and better relate the targets to the goals.

Uses

The Visions Tools and Targets report lays out the purpose of the targets: "These targets constitute the essence of Environmentally Sustainable Guidelines for SEFC as they provide very specific desired levels of performance for the neighbourhood. It is crucial to recognize, however, that they are intended to function as guides rather than standards. They are intended to be technically and economically feasible, but also challenging. Indeed, if all of the targets are achieved, they probably were not challenging enough."

The target setting approach was designed to help motivate and direct the efforts of the many individuals and groups whose decisions will affect the outcome of development on the site. They contribute to this by allowing diverse groups to translate them into terms they are familiar with and thus to take personal responsibility for helping to achieve planning objectives for the site. Thus, targets were used because they have the potential to inspire and direct action among a broad group of relevant actors.

The targets were intended mostly for use as indicators to assess outcomes or performance on key environmental issues affecting the site. As such they were intended to be included in the policy

statement. The consultants realized, however, that they may also be useful to the City in formulating developing plans and zoning (or other) regulations related to the site.

The PAMs are also seen as useful because they can serve to give shape to an amorphous concept like sustainable development. The public discussion around this site was preoccupied with defining the concept of sustainable development, featuring people with opposing interests laying claim to the concept for their own purposes. By agreeing on quantifiable targets, much of this "wheel spinning" debate can be by-passed and actors can proceed to more practical matters.

Problems

Targets are often difficult to set because of the lack of certainty around issues of technical and economic feasibility. In this case, the feasibility analysis was limited to the partial application of cost/benefit and resource use models. This reflected the lack of the financial resources needed to conduct a thorough technical and economic analysis.

One source of uncertainty when setting targets is the rapid pace of technological change. Targets are usually long term goals and what appears ambitious today may appear cautious in a few years if technological breakthroughs are achieved. This uncertainty makes even supporters of the target approach a little uneasy about committing to specific numbers as a standard of performance rather than as a challenge that may be easily met and surpassed in the future.

Another source of uncertainty is the future shape of development on the site. Targets, to have meaning, need to be placed in a development context: different development conditions will call for different targets. The Team tried to take this factor into account by proposing three development scenarios, but without knowledge of the basic structure of the site, the targets could be considered abstract and not very meaningful.

The issue is now being addressed by the City Planning Department through its drafting of a basic site structure plan. This plan begins to give form to the urban design policies in the Policy Statement. This means that general form and siting have been established for streets, block structure, allocation of densities and the park itself. This is by no means a final design for the site but will act as a base for a series of environmental plans required by the Policy Statement. The five plans, which address Waste Management, Water Management, Energy, Air Quality and Urban Agriculture, will test the feasibility of the relevant policy objectives and numeric targets in the context of the structure plan and make recommendations for their revision.

Setting targets seems to assume that achieving them is in the direct control of the target-setting agency. However, some of the targets will require the co-operation and participation by other jurisdictions, such as neighbouring municipalities, the regional government, the health board, and transportation agency, or provincial or federal agencies. They may also require the cooperation of private actors, such as property owners and developers. Realizing them will also depend on the behaviour and day-to-day choices of future residents of the site, over whom the City has little direct control.

Finally, the Sheltair team did not look at interaction among targets, a fact that weakened their forcefulness in the eyes of some. Interaction is possible in two ways: positive and negative. Positive interaction would mean exploring the potential for greater performance through combination of two or more policy objectives or measures. Negative interaction involves tradeoffs among objectives or measures (e.g., if you have water storage on the roof of buildings, can you also have green roofs?).

Lessons Learned

The Advisory Group succeeded in its goal to have City Council accept a research report that included aggressive environmental targets. One of the key factors in this success was the broad-based consultation involved in developing the targets, including getting the City's own staff of experts on side. Although working closely with a stakeholder group was time consuming for the consulting team, it seems to have paid off in terms of achieving support for the approach. The Advisory Group's and consultant's efforts in building support for the targets in the broader community also seemed to bear fruit as did the positive environment created by media reports.

However, they did not succeed in having the targets adopted by Council and included in the text of the policy statement itself, where they would have more influence than in the appendix to the statement. This points to the importance of having a fully worked out economic and technical rationale for the proposed targets. Without these supports, critics of the target approach can bring into doubt the feasibility of specific numbers used and delegitimize the whole target-setting process. Stronger support from City departments could also have been anticipated if a more formal process of consultation with them had been used. Department heads, influential councilors, and other senior officials need to 'buy in' to the whole approach: they need to see (or be shown) how the targets approach fits into their career objectives.

Another issue in this case was the ambitiousness (or aggressiveness) of the targets. While they were designed to be challenging, some stakeholders (in particular, the Real Estate Department) felt that they were too ambitious and would undermine the economic feasibility of the project. As one interviewee from the Real Estate Department said, "What's the point in doing a project that is totally unfeasible from an economic point of view? No one will replicate it." This perception, although it may be invalid, can undermine the whole rationale of a project like SEFC in that it was conceived as a demonstration project (i.e., to show that green development is technically and economically feasible).

State of the Region Report – Buffalo, New York

Case Identification

The Buffalo-Niagara Region is located in western New York adjacent to Southern Ontario. It encompasses parts of two nations, one state and one province, and several regional and local municipalities. Partly in response to this jurisdictional fragmentation, community leaders called for processes to build an awareness of the interdependent nature of the region and its component parts. It is within this context that the University at Buffalo's Institute for Local Governance and Regional Growth first outlined the State of the Region Project in spring 1998. The Institute spent a year developing the project (including indicators, targets and baseline data) as a way contributing to regional competitiveness and improving the quality of life in the region.

Context

The Buffalo-Niagara Region covers a land area of 7,598 square miles, of which 6,448 (85%) lies within Western New York, with the remaining 1,150 square miles (15%) in Southern Ontario. The population of the area is 2,447,251. Approximately two-thirds of these residents (1,575,948 people) live in western New York and the remainder (871,303) in the two regional municipalities of southern Ontario.

The Institute believed that the region's future ability to compete in a global arena, and to sustain and continuously create a better quality life in the region depended on its ability to use its combined resources as one region. To move the region forward more effectively, it needed an objective, reliable base of information to characterize its current status, and to identify where and how it could do better.

The Institute initiated the State of the Region Project in the summer of 1998 with the goal of developing a "State of the Region Report". The purpose of the State of the Region Project was to lay a foundation for regional understanding, decision making and action. A project team within the Institute was formed. The first step was to identify eleven areas central to regional competitiveness and the quality of life - Economy, Environment, Government, Education, Technology and Information, Health, Public Safety, Human Services, Equity, Planning and Land Use, and Regional Assets. Through these issue areas and the connected indicators and targets, the Institute was able to identified key and propose goals and action steps for future progress.

The Institute established a Task Force in each issue area, consisting of stakeholders such as state legislators, academics, leaders of community groups, academics, private sector executives, and government officials. Each Task Force was led by a chairperson, and was asked to propose eight to ten indicators of performance. Over 200 members on 11 Task Forces represented a wide range of perspectives from of the regional community. They met through the spring of 1999 and were aided by both Institute staff and members of the State of the Region Project Team, the latter who helped track down data.

The State of the Region Report, drafted in the summer and fall of 1999, presented a baseline assessment of the 98 indicators selected by the Task Forces. The report features trends, indicators and targets for improving performance, along with suggested action steps for making progress.

Because the Institute had no jurisdictional responsibilities for implementing the recommendations, the State of the Region Report was viewed as an advisory document that could encourage government action and facilitate collaboration among organizations in the region. A progress report for 2001 is under development.

Performance Assessment Measures (PAMs)

The Task Forces worked with the project team to propose short-term and long-term targets for each set of indicators. To facilitate both action and continuing assessment of regional performance, the targets were to be:

- Quantifiable with respect to both performance level and the time when the goal should be achieved.
- Ambitious, yet achievable that is, not so lofty as to be impossible to reach, yet sufficiently demanding to require concerted regional effort.
- Widely accepted, both by those who are expert in the field and among the general public.

For each indicator, the appropriate Task Force and project team also suggested one to five action steps to begin moving the region toward the proposed goals. Strategic and evocative, rather than specific and prescriptive, the action steps described general directions for moving ahead. For example, in the case of Hazardous Waste Sites under the issue area "Environment", the actions steps are the following:

Step 1. For State and local policymakers and environmental agencies: Meet annually to coordinate efforts for remediating Class 2 Sites.
Step 2. State and local policymakers, environmental agencies, researchers: Assess remediated sites to track current uses, impact on tax base, associated job creation, and other social and environmental impacts of remediation.
Step 3. Environmental groups, regional residents: Lobby to promote the clean-up of Class 2 and other sites by the Superfund and responsible entities.

All indicators in each issue area all have these kinds of actions steps connected to them.

The goals and action steps in the State of the Region Report are intended primarily as starting points for regional deliberation, initiatives, and innovations. The Task Forces and project team anticipated that the indicators, targets, and action steps will quickly be met with suggestions for additional improvements, and that they will change over time as the region evolves and new information becomes available.

Table J contains a selection of indicators, baselines and targets drawn from the Report, which contains over 80 indicators from across the eleven issue areas, many of which do not apply to the common features of sustainable communities model describe in Appendix II.

Table J: Indicators, Baselines and PAMs for Buffalo-Niagara

Feature	Indicator(s)	Baseline	Target 2002	Target 2005
Ecological Protection	Percentage of watershed basin segments considered stressed or impaired	NA	60	Maximum of 50
	Number of class 2 and 2a Hazardous Waste Sites in Western New York	NA	Maximum of 43	0
	Percentage of brownfield sites for which an EA has been conducted	NA	A minimum of 85	100
Transit-Supportive Urban Design	NA	NA	NA	NA
Urban Infill and Centres	Ration of growth in the urbanized land area to the growth in the number of metropolitan households	NA	1	1
	Farm acreage across the region and in individual counties and regional municipalities as a percentage of 1997 levels	100	Minimum of 97 (2002)	Minimum of 97 (2007)
Healthy Local Economy	Annual regional job growth rates as a percentage of national rate.	NA	A minimum of 66	A minimum of 100
Sustainable Transportation	Regional Vehicle Miles Traveled as a percentage of 1990 level.	100	Maximum 100	Maximum of 95
	Riders per capita per year on transit in Erie and Niagara Counties.	24	24	27
Affordable Housing	Regional homeownership rates as percentage of total households	NA	Minimum of 70	Minimum of 75
Liveable Community	Child Care capacity for children under six as a percentage of child population	NA	50	66
Low-Impact Sewage and Stormwater Treatment	NA	NA	NA	NA
Water Conservation	NA	NA	NA	NA
Energy Efficiency	NA	NA	NA	NA
3R's	Percentage solid waste recycled		40-42	50
Better Planning	Percentage of all regional counties and municipalities that engage in at least one joint planning activity with another county, municipality, or service agency.	NA	Minimum of 75 (2003)	100 (2006)
Others	Hourly readings of zone levels in ppm.	NA	Remain at current low levels	Less than .08
	Concentration of particulates	NA	Below statewide levels	Below statewide levels

Note: Many of the indicators and targets do not apply directly to sustainable community development. NA – not available.

Process

Through formal and informal interviews, preliminary research revealed widespread interest in performance assessment measurement among various leaders in the region. This research also made clear the scope of the effort: measuring regional performance across eleven major issue areas for a region as complex as Buffalo-Niagara —and doing so in a way that could facilitate collaborative action —would require expertise and input reflecting a wide range of perspectives.

To gather further insight, in the summer of 1998 the Institute engaged eleven regional leaders as State of the Region Task Force Chairs. Working with the project team, each chair (all U.S. representatives apart from one former school principal from Niagara Falls) appointed a group of 12 to 20 community experts, primarily U.S.-based, to assist in the process of selecting and developing indicators and targets. Task Force members were chosen to embody diverse fields in each of the issue areas and to reflect different geographic areas, backgrounds, sectors (private, public, nonprofit, civic, academic), and points of view within the region. Beyond the participants in the Task Forces, there was no direct citizen involvement in setting the targets.

With the goal of creating a final compendium of indicators that would be comprehensible, manageable, and focused, each Task Force was asked to advise the State of the Region Project Team in the development of the eight to ten most useful indicators and targets in its issue area. To assist in narrowing down the number of many potential indicators the Project Team adopted seven selection criteria:

- Outcomes-based: An indicator should focus on regional performance or output, for example, test scores, rather than on regional input, such as the amount of money spent per pupil.
- Valid and reliable: An indicator and its supporting data had to appropriately measure the process or conditions being assessed, and had to have sufficient assurances of quality and accuracy to support policy decisions.
- Understandable to an informed citizen: While highly technical measures might be useful to program managers and their supervisors, indicators that would help promote widespread regional consciousness and dialogue was preferred.
- Bias-free: A particular indicator might favor or disfavor particular interest groups or political figures, but could not be accepted or rejected for that reason; rather, its inclusion or exclusion depended upon its importance to the region as a whole.
- Routinely measured: Since the State of the Region Project seeks to provide a periodic “report card” that tracks improvements and declines in regional performance over time, indicators could not rely on one-time studies or on data updated only at long intervals.
- Conducive to goal-setting and action: An indicator measuring average January temperatures, for example, while relevant for many regional issues, would not be included, since no policy change or action could affect it.
- Relevant to the Buffalo-Niagara Region: An indicator had to focus on a topic of significance to western New York and southern Ontario, as opposed to issues which might be of broader national or international interest but had no specific regional relevance.

These seven criteria were used to guide the selection of indicators and were also applied in the development of the targets. The Institute would have preferred to set targets for the indicators that would be consistent with overall goals for the region. However, at that point in time, the Niagara Region (which is not a formal geographical jurisdiction) had not identified any relevant targets. This meant that the Institute had no commonly accepted targets to lean towards and had to develop targets from scratch in collaboration with the Task Forces.

As a starting point the Institute developed a set of targets for each of the 8-10 indicators in each issue area. However, the members of each of the 11 Task Forces wanted to be a part of the target development process. Once a Task Force identified an indicator meriting further review, the State of the Region Project Team then identified sources and sought baseline data on relevant patterns and trends in the Buffalo-Niagara Region.

As the process unfolded, the Task Forces became more involved in developing and redefining the targets with the Institute and the process of developing the targets became much more case specific and elaborate. Over a six-month period, from the fall 1998 through to spring 1999, the eleven Task Forces worked with project staff to gather and examine existing data. In most cases it was still the Institute's responsibility to find the relevant data, in consultation with expert members of the Task Forces.

The development of the targets was not guided by an overall methodological approach or reporting framework. Rather, each target was assessed separately and the appropriate approach was chosen based on the specific indicator and issue area in question. One approached used frequently was benchmarking at a national, state and regional level. Targets were also derived from local studies from regional studies or adapted from targets set in other, comparable regions. For example, benchmarking was used to set targets for the indicator "Technology Based Business" in the issue area "Technology and Information". Here the presence of technology and information businesses was benchmarked against the presence of these types of businesses in comparable regions such as Silicon Valley and the Detroit, Michigan area. Another example is in the issue area of "Economy" where the overall cost of doing business in the region was benchmarked against the average national cost of doing business.

However, in for some of the eleven issue areas, the adoption of national, provincial, or state level targets was not seen as desirable, given the uniqueness of regional circumstances. This was primarily the case in the "Environment" issue area, with the exception of the target for "Air Quality". Most environmental issues were locally focussed with significant differences emerging between local areas with the overall region itself. Thus, local reports identified or produced by community experts in the Task Forces, served as a basis for the target setting in this issue area.

In other cases where there was a desire to use regional data, the Institute had to use national data. An example is in the case of "Adult Literacy". Here there was no regional data on the level of adult literacy so national data was used. In other cases, where no suitable data was available, the Institute, in consultation with theTask Force participants, would create a target and then make a note that more accurate data for that specific area would be collected in the future.

Once the baseline data had been located, the Institute proposed targets and brought them to the Task Forces whose members would evaluate the baseline data and targets. Data and targets would go back and forth between the Institute and the Task Forces until the targets were refined and finally accepted by the Task Force participants. In cases where a Task Force could not locate data it needed to assess a proposed baseline or target, it would request help from the Institute. If the Institute was unable to find the data a note was made to this effect. Many of the targets do not have adequate baseline data upon which to evaluate progress.

The time frame for target setting also reflects a case specific approach rather than an overall framework. The meaning of short term and long term differs depending on the indicator and target concerned. The meaning of short term ranges from 2000 to 2005 while long term ranges from 2004 to 2010. In terms of reporting, a Progress Report was issued in 2000 and another Progress Report was planned for 2001.

Uses

Since the Institute does not track the uses being made of its State of the Region Reports, it does not know to what degree the various municipalities and other participants have embraced or used the proposed PAMs. However, acknowledgement of the scope, outreach and work of the project, in the form of informal comments and general knowledge about the project, has been given to the Institute from mayors, opinion leaders and elected leaders and state senators. Furthermore, the Institute knows that some media make use of the targets as reference data.

In terms of the private sector, there is, to some degree, an awareness and interest of the targets but there have not been sufficient finances to move towards any of the targets in issue areas that include participation from the private sector.

In a general way, the targets and action steps appear to have had some impact in signaling the need for "action" and they ensured that the community participants had something measurable and tangible to relate to when using the report.

The project has had a major positive impact on the facilitation of community understanding and engagement. Various community groups have experienced that they do not have to "reinvent the wheel" any longer when working on community-scale projects. Instead they have made use of the indicators and targets in the report as a common frame of reference in connection to their own community projects to see how their own targets were measuring out in comparison to the ones in the report. For example, the newly founded community group, The Community Health Network of Western New York initially adopted the Report's targets for their own project. Since then they have, in collaboration with the Institute, continuously been involved in developing and redefining new indicators and targets for measuring health issues in the region. Furthermore, an increasing number of funders are using the report as a common framework to evaluate project proposals.

Problems

When forming the PAM project, one of the main challenges in getting community involvement was the very strong local voices of autonomy within the region. The region has a history and tradition of

strong local autonomy so there was a real suspicion that a regional government was being proposed. Some wrongly believed that a motivation for doing the project was to use the information to argue for regional government. This was alleviated however once the people became more familiar with the real intent and function of the report.

The Institute also had a real challenge in narrowing down the numbers of indicators chosen for each subject area. When forming the indicators for each subject area the Task Forces easily ended up with hundreds of indicators for each topic area that they passed on to the Institute. The Institute, in collaboration with the Task Forces, then had to select only 8-10 indicators for each major issue area. This was achievable but proved to be a tiresome and time consuming process that had to be achieved before they could even think about targets for the indicators.

Lessons Learned

One of the objectives with the State of the Region Report was to develop a set of data and tools so that groups involved in development work across the region would not have to 'reinvent the wheel' every time. Keeping this in mind, the Institute uses the resources of others in guiding their own process in developing the project and they advise others to do the same. Furthermore, the Institute learned how to use and appreciate input and support from the community representatives. In this respect the Institute stresses the importance of getting community input across the eleven different issue areas from the very beginning and make sure to make use of those who are willing to participate in the process.

Having community experts and leaders involved in developing indicators and targets, was the only real way to get the required local expertise. Furthermore, the Institute believes that the fact that the Task Forces appointed their own Chairs, reinforced both collaboration, local engagement, support and dedication to the project. The inclusion of representatives from various community groups in the Task Forces gave the different groups an opportunity to showcase local projects that they had been working on for a while. This was also a catalyst for further understanding and collaboration. In all, community engagement seemed to be the right way to foster regional thinking and that was one of the objectives of the project in the first place.

In terms of the target setting, the Institute learned that is was a mistake to try to get the participants to adopt the targets that were initially set by the Institute. This only created resistance since the Task Force members had their own interests and expertise. On the other hand, letting the Task Forces be involved in identifying their own targets brought local expertise to the table and created engagement, commitment and collaboration. The important point is that the targets facilitated awareness around the measurement of the indicators even if the first targets were later replaced with others.

Summary of Case Study Findings

The performance assessment measures identified through the case study research cover a broad range of environmental, economic and social issues. The most sophisticated and well-developed projects included all seven of the key components of community sustainability reporting programs (as indicated in the introduction). However, some case studies lacked elements such as a temporal framework, baseline information or detailed action plans. Table below summarizes the findings in this respect.

Table K: Elements of a Performance Assessment Program Utilized

Community	Policy Goals	Indicators	Baseline	Targets	Time-Frame	Action Plan(s)**	Reporting
Hamilton	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Buffalo	Yes	Yes	Yes*	Yes	Yes	Yes	Yes
Don	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Civano	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SEFC	Yes	Yes	No	Yes	No	Yes	No
Okotoks	Yes	Yes	Yes*	Yes	Yes	Yes	Yes
Santa Monica	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* Partial use of baseline for some PAMs ** The nature and scope of Action Plans varied considerably.

The Practical Uses of Performance Assessment Measures (PAMs)

There are a wide variety of practical uses of PAMs that can serve to justify the investment of time and resources in developing them. These benefits may be grouped into two broad categories –uses for the initiating government or agency and by other agencies or stakeholders. Of the seven programs profiled in this report, municipal governments initiated five and an academic Institute and a provincially mandated government agency, the Toronto and Region Conservation Authority, initiated the remaining two projects. Our research shows that those developing and participating in PAM setting processes felt that the positive results of the projects more than justified the costs. In several cases, municipal governments were actively working toward reducing infrastructure and related costs by promoting sustainable community development through the use of PAMs.

Municipal governments and the provincial government agency identified the following uses of PAMs:

- To operationalize the vision, goals and objectives of the community's sustainable development efforts. This is a fundamental benefit of establishing a performance assessment program.
- Political and staff education, awareness raising and mobilization. Improved political and staff relations regarding policy and program development. This was cited by participants in three case studies and is linked to the enhanced accountability provided by an official Council adoption of the targets. The targets were also said to help integrate or unify the policy and program efforts of different government departments and to help integrate sustainable development into the corporate culture.
- Support for internal priority setting and budgeting processes.

- Program and policy review and revision. If targets are not being met, programs and policies can be improved for better performance and greater government cost savings.
- The identification and implementation of capital and operational cost savings, as in the case of Okotoks and Civano.
- Guiding the development of planning guidelines, zoning bylaws, and other regulations for site, subdivision and neighbourhood level development approval.
- General public education regarding sustainable development. This was cited by all of the case study participants.
- Key stakeholder education and awareness building.
- Site and subdivision plan review. In particular, supporting a systemic approach to the cumulative impacts from different land use practices.
- Stimulation of innovation and green developments among developers and builders.
- Helping to establish new partnerships around commonly shared interests (i.e., "Who do we need to work with in order to establish and reach the targets once they have been set?")
- Justification for new fees or taxes (e.g., a water levy to help finance water conservation efforts).
- Staff evaluation and performance incentives.
- Improved internal accountability and management through monitoring the degree or progress (or lack thereof).
- The coordination of existing monitoring efforts in order to avoid duplication.
- Providing a rationale for establishing new monitoring programs or restore canceled ones.

Uses by organizations not directly responsible for developing or adopting the targets were identified as follows:

- Funding organizations, such as senior levels of government use the targets as a framework for evaluating proposals or setting funding priorities.
- Media use targets as reference data in their reports, and question how targets are arrived at.
- Developers and development consultants use targets to help them plan communities and design dwellings. Integrating these considerations into development plans can speed development approvals or, in several cases such as Civano, are a regulatory requirement.
- In the case of Buffalo-Niagara Region, many local organizations adopted the framework and targets that emerged from the study and did not have to "reinvent the wheel". They also use the regional study to benchmark against there own activities.
- Citizen groups use targets to lobby for improved policy and program activity and as a basis to hold staff and politicians more accountable.

Process for Developing PAMs

Designing PAMs typically involves a combination of staff and expert research and analysis to establish an initial set of targets followed by one or more forms of public consultation. Focused public consultation, either through the use of project Task Forces and committees, is typically followed by wider community consultation. Broad community consultation exercises appear to be designed more for purposes of communication, as opposed to opportunities for detailed input into the development of targets. Broad community consultation can often establish the vision, values and

goals of the community, which the technical experts and community stakeholders typically take into account in choosing indicators and setting targets. For example, the community survey conducted by the Town of Okotoks indicated a strong desire to maintain the environmental quality and livability of the Town at the expense of continuous growth. Broad community consultation techniques include:

- Direct Participation on Task Forces/Committees.
- Local workshops.
- Workbooks mailed to the broad community.
- Surveys distributed to households.
- Mail-outs in utility bills.
- Indirectly through the media.

The advantages of involving experts and stakeholders from the community include:

- The opportunity to leverage project resources and expertise from individuals and organizations.
- Facilitating collaboration and partnerships.
- Tapping into knowledge of local or regional conditions.
- Empowering individuals and community groups.
- Building acceptance of targets as well as general 'buy in'.
- Promoting a better understanding and awareness of the sustainable community initiative and its goals.

The main disadvantages are that increased involvement from the community may result in additional resource requirements in order to conduct the research and analysis and may lengthen the time-frame for establishing the performance assessment measures.

To be successful, the process for establishing performance assessment measures needs to remain flexible in the methods used to arrive at targets. The case studies showed that in some cases, the community worked towards the targets in several stages (e.g., the Don Watershed). Likewise, methodologies for establishing the baselines may change over time, or it may become obvious that it is not technically or economically feasible to reach certain targets. In some of the case studies, there was insufficient technical or scientific data to support targets so the project participants used 'gut feels' rather than abandoning target setting in that area. For other indicators, project participants would establish a 'directional' target, (e.g., an increase in transit ridership by 2002) rather than a quantified target.

Criteria for Choosing Targets

There are a number of important differences between the general criteria used for the establishment of targets and those used for identifying indicators. Most of the case study projects selected indicators based on broad sustainability goals or objectives and then proceeded to develop targets and action plans for achieving them. The criteria used for target setting reflect the fact that targets have a different role in operationalizing goals and plans for sustainable development than do

indicators. Specifically, there are important issues regarding the acceptance of targets by staff, politicians, key stakeholders such as developers and the general public. Table L contrasts the general criteria typically used for target and indicator selection.

Table L: Comparison of Selection Criteria for Targets and Indicators

Target Selection Criteria	Indicator Selection Criteria
Should be ambitious and aggressive but achievable.	NA
Reflect a mixture of short term opportunities and longer term goals.	NA
Technically feasible.	NA
Economically feasible.	NA
Should be internally consistent rather than contradictory.	NA
Should be synergistic or mutually reinforcing of other targets, goals or objectives.	NA
Should link to specific actions/steps that can be taken by governments, stakeholders and/or general public.	NA
Foster creativity and innovation.	NA
Link to/operationalize broader goals or vision.	Link to broader goals or vision.
Scientifically valid/reliable.	Scientifically valid/reliable.
Relevant to user needs and accepted by users.	Relevant to user needs and accepted by users.
Understandable to users/general public.	Understandable to users/general public.
Relevance to indicators/stated goals or vision.	Relevance to stated goals or vision.
Attractive to media.	Attractive to media.
Cost effective to monitor and use.	Cost effective to monitor and use.
Unambiguous.	Unambiguous.
NA	Comparable with indicators from other jurisdictions.

Indicator criteria adapted from "Developing Indicators of Urban Sustainability: A Focus On The Canadian Experience", V. W. Maclaren. ICURR Press. 1996. NA – Not applicable.

Many case studies demonstrate that major sustainability goals, issue areas and objectives are first established, followed by indicators and then baselines, targets and reporting and monitoring plans. The process of establishing PAMs begs the question of what actions, and by who will be needed to achieve them. The exact nature of the criteria used in a particular PAM development project will be determined by factors such as:

- The needs of the target audiences.
- The intended uses of the PAMs.
- The interests of the initiator of the project.
- The geographic scope of the project.
- The number and 'nature' of the participants (e.g., level of commitment).
- The amount of available time and resources.

A fine balance must be struck so that targets are sufficiently aggressive to indicate progress and to challenge implementing organizations but are not overly ambitious, lest they undermine political or staff support or, dampening public enthusiasm for the project.

Each community will find that targets are not created equal with respect to their ability to promote their sustainable community goals. For example, the number of trees planted in a given three-year period may not as fundamental in one community as the increasing the average density of new development or doubling transit ridership in another. Public outreach and education can result in greater acceptance of more ambitious targets and action plans over time. The framework of 12 common sustainable community features may be used as a guide in helping communities establish goals and corresponding targets.

Methods of Target Setting

The methods used to establish specific targets include the following:

- The adoption of pre-existing targets from national, state, provincial, regional or local governments and related agencies. In Hamilton-Wentworth, Buffalo-Niagara, Civano and Okotoks a variety of pre-existing targets were adopted. This is advantagous because an existing body of work with legitimacy can be utilized at little cost, however, it may have to be adapted to reflect the local or regional circumstances.
- A literature review to identify appropriate benchmarks and case studies for reference data and precedents. This approach was used to establish the performance assessment measures for South East False Creek.
- Use of experts through special workshops, interviews and the use of consultants. Experts are key to obtaining baseline information and in establishing the technical legitimacy of the targets.
- An historical literature review to help establish baseline information.
- Telephone and mail-out surveys of public attitudes and values.
- Special workshops for key stakeholders, such as developers, builders and government policy and program manager, who have vested interest in the outcome of the project.
- Cost-benefit analysis including the use of full cost accounting. In the case of South East False Creek, the cost-benefit analysis helped the initiating organization determine what the long term financial impacts of the proposed targets might be, and helped to set priorities. In Civano, such information was critical in convincing developers of the financial feasibility of implementing the proposed targets on the green field development.
- Technical feasibility studies, which may involve the use of modeling with geographic information systems, computer assisted design, integrated resource accounting and energy use modeling using tools such as HOT 2000. Aerial photography and analysis, for example, can be used to establish targets and baselines for aggregate land use.
- Assessments of best available technology in order to ensure that targets can be met.
- Scientific assessments that involve establishing the presence or absence of indicator species, such as gray tree frogs, can be used to indicate the health of aquatic and terrestrial ecosystems. The monitoring of these types of targets can accomplished through the use of community programs.
- Political sensitivity analysis, which may involve an analysis of public survey findings to avoid jeopardizing or significantly delaying the project.
- Carrying capacity analysis, as in the case of Okotoks, which is limiting growth based on the carrying capacity of the Sheep River.
- In the absence of sufficient information, best professional judgment or ‘gut feel’.

Baseline Data, Reporting and Monitoring

Baseline data, reporting and monitoring are important elements of an ongoing sustainability monitoring that incorporates PAMs. Baseline data sets the context for understanding the meaning of, and in some cases establishing, targets. In some cases, the absence of baseline data may be attributed to the fact that the performance assessment program was intended to influence new developments in a green field or infill setting, for which no baseline data was available (e.g., Civano, Southeast False Creek). A number of important insights were gained with respect to monitoring targets:

- A annual, three or five year reporting period is considered reasonable, but may vary depending on the PAM. Too frequent reporting is costly and obtaining data can be difficult, while too infrequent reporting makes it difficult to improve policies and programs and maintain accountability and momentum.
- Targets should be revised as reviews and reports are undertaken, particularly if new baseline data is obtained or it is generally viewed that the original targets are too easily achievable. The process for revising the targets should include key stakeholders. Changes to the targets should undergo some form of public scrutiny, and perhaps require Council approval. Furthermore, any changes to the targets should be undertaken in accord with the indicators, goals, objectives and broader vision of the sustainable community initiative.
- The organizers may want to have interim reports for selected PAMs if there is a more urgent need to track progress and make policy and program adjustments.
- There may be lack of continuously available data to support the monitoring efforts over a long period of time. Organizations that provide data may cease to do so over the length of the project. In order to help minimize the negative consequences of such developments, the project leaders may wish to ensure that the monitoring of key targets is within their jurisdiction and that adequate resources are made available.
- Sometimes there may be a need to merge data collected using different methods or conceptual frameworks. This can be costly and difficult to achieve. It may be necessary however, in order to get baseline data at the geographic scale you require.
- Reporting formats may vary depending on the key audience targeted. Technical reports are more appropriate for experts and key stakeholders, while more accessible and readable reports are better suited for wider public outreach and educational efforts.
- Most case studies included a media or outreach strategy to help build public interest in the project and to communicate the results of monitoring.

Key Issues To Consider When Developing Performance Assessment Measures

Options for Dealing with Possible Conflict Over Establishing PAMs

Sustainable community reporting using PAMs is key to providing greater definition of the community goals and vision of sustainability and mobilizing government, non-governmental organizations and the public. However, this does not come without its costs. One of the challenges of establishing PAMs (as opposed to a visioning or indicators exercise) is the increased potential for conflict among participants (i.e., among initiating agency staff or between staff and politicians, between the initiating agency and external stakeholders, or among external stakeholders). The potential for conflict arises largely from the differing perspectives, expertise and interests brought to the table by the participants. For example, in choosing targets, politicians may want to avoid those they consider too ambitious and that may embarrass them in the future if they are not met. Staff may be primarily interested in the scientific credibility of targets or have concerns about being able to deliver with adequate programming. Developers will likely attend more to the economic feasibility of targets, or any financial risks that could undermine their profitability. Public interest groups may be more interested in getting the most ambitious targets adopted.

Of course, conflict is not necessarily something to be avoided – a variety of perspectives and expertise help to stimulate debate. It also ensures that a wide range of societal interests is included in the performance assessment process. However, conflict that endures without resolution may threaten to undermine the establishment of PAMs by driving away key stakeholders or weaken their legitimacy in the eyes of target audiences. The potential for such conflict can be minimized by having clearly established decision-making procedures and clear identification of the agency or individual that will adjudicate serious conflicts. Where conflict avoidance is ineffective, the case studies revealed a number of options for addressing it constructively:

- Drop individual PAMs that are too controversial to pursue in the context of the performance assessment process.
- Abandon the notion of setting quantitative targets for certain highly controversial indicators and instead, adopt 'directional targets' (e.g., an increase would be an improvement).
- Refer the specific PAMs to another agency for further research and development.
- Undertake more detailed study of the technical or economic feasibility of the PAM.
- Postpone adopting a quantitative target until further data or analysis becomes available.
- Adopt an interim target with the proviso that it will be reviewed and appropriately revised at some future date (e.g., during the first progress report).
- Negotiate the acceptance of more ambitious targets with easier ones, as in the case of Okotoks.

Enhancing the Legitimacy of PAMs

Establishing PAMs raises questions of legitimacy more acutely than sustainable visioning and indicator programs because of the above noted potential for conflict, and due to the fact that the targets may have an impact on political and staff career prospects as well as the allocation of public resources. Therefore, when developing a process to establish PAMs, it is important to carefully consider how best to develop and maintain legitimacy and credibility. A program enjoys legitimacy

when relevant audiences have confidence in the process that led to its development and in its chances of being effective. The three major relevant audiences in this context are political and senior bureaucratic decision makers, the general public and the range of more directly involved stakeholders such as ENGOs, consultants, developers, and so on.

Legitimacy issues will vary for each of these audiences depending upon the uses to which the PAMs are going to be put. For example, the general public may be more interested in the availability of parkland than in the preservation of a regionally endangered plant. Similarly, from an accountability perspective the legitimacy requirements for PAMs would be different if one of their intended uses was to review and evaluate the performance of senior staff. Hence, the intended uses help to determine the nature of the legitimacy requirements in the process.

Our case studies revealed a number of issues and techniques that help to build the legitimacy of the PAMs from the outset of their development:

- Work toward political and senior staff 'buy in' in order to help to ensure that the required resources and policy decision for implementation will be made available. Some formal approval by Council or a related body with authority over implementation should be sought.
- Balance the ambitiousness of targets and a realistic assessment of what can be achieved under local conditions, recognizing that conditions may improve and public attitudes may change over time as a result of outreach and educational programs.
- Incorporate the widest range of interests by choosing PAMs that match the needs, goals, objectives and the vision of the sustainable community development initiative.
- Ensure that both the general public and key experts and community leaders have a meaningful role in developing the performance assessment process. This should include some degree of influence over the final shape of the program, either through direct consultation or opinion surveys.
- Where possible, achieve consensus over the design of the performance assessment process and the associated targets among those actively involved in its development.
- Involve your target audiences early in the development of the performance assessment process.
- Ensure that an adequate outreach and communication program is in place to 'sell' the program to the general public and to address criticisms. Try to get well known community leaders to endorse the program, e.g., by 'signing on' to a sustainability accord built around the PAM development process. Prepare flyers summarizing the main goals and targets of the program.
- Develop a progress reporting framework that speaks to your target audiences, giving consideration to the need for an accessible reporting style for the general public and a technically defensible style for expert stakeholders, if need be.
- Offer to work with key stakeholders in addressing barriers to achieve quantifiable targets.
- Avoid setting contradictory or inconsistent targets that critics could point to and possibly undermine confidence in the whole set of targets (e.g., increase affordable housing substantially but meet air quality and energy efficiency targets that require the use of more expensive materials in housing construction and raise housing prices).

Strengthening Implementation

The further operationalization of the vision, goals, objectives, indicators and targets of a sustainable community initiative involves linking the targets to recommended actions or steps that indicate how the targets are going to be met, and by whom, in the given time period. It is important to have some understanding of which targets represent significant challenges, and may be beyond one organizations direct control, and those that are more straightforward and likely to be achieved in the short term. It may be necessary to delay the development of implementation plans for some targets. Some suggestions in this area include:

- Ensure that those who will be responsible for implementing the program have 'bought into' the PAM development process and the final targets and resulting action plans.
- Understand which targets involve shared responsibility and which ones your organization has little control over (e.g., consumer behavior).
- Understand the needs of key stakeholder groups and work to address their concerns during the implementation of policies designed to achieve the targets. For example, provide training for builders on the use of energy efficiency designs to help achieve housing energy use targets or, offer to help developers to reduce risks associated with innovative development projects by cooperating in the marketing of the project.
- Obtain official endorsement of the entire sustainability initiative, from visions, goals and objectives to indicators, targets, baseline data, monitoring and reporting schedules and action plans.
- Incorporate the objectives and targets into key municipal and regional documents such as strategic plans, community plans, building and health codes, budgets, social planning strategies, affordable housing strategies, and so on.
- Plan to remove regulatory barriers that would impede the implementation of the PAMs. For example, ensure that the engineering department is 'on side' with the targets and action plans to reduce stormwater runoff and the need for natural drainage systems.
- Build flexibility into the design of the PAMs so that broad direction is given to those who will be responsible for implementing them, but specific action measures such as subdivision and housing designs are left up to them.
- Remain flexible as the implementation phase unfolds, i.e., by regularly conducting progress reviews and adapting indicators and targets accordingly.

Conclusion

This project succeeded in reviewing some key experiences with PAMs and the authors' hope that the insights gained will be of use to urban managers and citizens that are committed to sustainable community development and are interested in undertaking a community sustainability and reporting initiative. The research has shown that the use of PAMs, within the context of such initiatives, represents an invaluable tool to improve accountability, guide policy development and revision, evaluate progress, identify capital and operational cost savings, and promote understanding of the meaning of community sustainability and the need for positive changes.

Further research would help provide additional analytical and informational tools for Canadian community leaders in order to promote the widespread use of PAMs into their sustainable community reporting initiatives and implementation efforts. The next steps could include:

- Research the development and use of environmental management frameworks that could help integrate PAMs into a more holistic system of analysis, identify potential conflicts and synergies among PAMs, and link more systematically to the main policy goals of the community.
- In-depth analysis of how community sustainability PAMs could be linked to regional, provincial, national and international sustainability PAMs (e.g., the Kyoto targets for reducing greenhouse gas emissions) or to accepted standards of community sustainability (e.g., minimum densities for supporting basic transit services, maximum impervious coverage in a watershed)
- A detailed guidebook for use by those intending to undertake a sustainable community PAM development exercise, including a step-by-step model and process options, sources of data and funding, human resource needs, monitoring and reporting or progress, and so on.

The present research shows, however, that the notion of a uniform set of sustainability targets that could apply to communities across the country is unrealistic and unnecessary. If PAMs are to be legitimate and effective in guiding public and private actions towards sustainability, they must reflect the sustainability goals of each community rather than serve as rigid standards to which each community should adhere.

Initial efforts to use PAMs in support of community sustainability remain very promising and suggest that measurable targets with adequate monitoring and reporting represent an important stage in our ongoing efforts to define and implement sustainable community development practices.

Despite the challenges and the potential for an increased level of controversy, our research shows that these are far outweighed by benefits such as clarifying community goals, establishing priorities, improving accountability, reducing public costs, raising awareness and promoting concrete implementation of sustainable communities. All of the participants in the case studies interviewed felt that developing PAMs was well worth the effort. The establishment of PAMs are a much needed, logical next step in the efforts of Canadian community leaders to mobilize resources in order to move toward the implementation of more sustainable and livable communities.

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Appendix I: List of Selected Sustainable Development Projects Using PAMs

I.	Southeast False Creek (SEFC), Vancouver
II.	Town of Okotoks, Alberta
III.	Don Watershed Report Card, Toronto
IV.	Civano, Arizona
V.	Alberta, Canada
VI.	Maine Economic Growth Council
VII.	Hamilton-Wentworth Vision 2020
VIII.	Pasadena, California
IX.	Santa Monica Sustainable City Program, California
X.	Jacksonville Indicators, Florida
XI.	Report Card – Summary of Health Issues, Minneapolis, MN
XII.	Buffalo – State of the Region Report
XIII.	Montgomery County, Ohio, Family and Children First Council's 1999 Report to the Community on Outcomes and Indicators
XIV.	Florida Benchmarks Report
XV.	Environmental Report Card, 1999: An Assessment of Hawai's Environmental Health
XVI.	Chesapeake 2000 and the Bay
XVII.	North Carolina Progress Board: Measuring Our Progress
XVIII.	Oregon Benchmarks

Appendix II: Features of Sustainable Community Development

The list of elements beneath each common feature is by no means comprehensive given the broad scope of community contexts and the many different practical means of implementation.

ECOLOGICAL PROTECTION
Refers to special measures to protect nature, restore native habitat, or develop greenways. Includes elements such as:

- Ecological and habitat inventory of a site, prior to design.
- Protection of trees, creeks, swamps and nesting sites. Implementing study findings.
- Green space protection and restoration.
- Conservation covenants.
- Use of native species in landscaping.
- Greenways & nature trails.

TRANSIT SUPPORTIVE URBAN DESIGN
This refers to transit- and pedestrian-friendly urban designs, such as higher density, housing near transit facilities, good street lighting.

URBAN INFILL AND TOWN/CITY CENTRES
Infill refers to development projects in areas that already have infrastructure and servicing as opposed to greenfield projects. Town or village centres means compact, mixed-use developments with good quality transit service.

HEALTHY LOCAL ECONOMY
In larger projects, this involves encouraging the development local economy, to reduce the need for residents to drive. This involves elements such as:

- Zoning land for commercial or industrial uses.
- Encouraging home based businesses.
- Zoning for 'live-work' units (light industrial/commercial/limited retail, plus live above units)
- Creating a local economic development strategy.

SUSTAINABLE TRANSPORTATION

This refers to encouraging alternatives to the motor car as a means of transportation, such as including bicycle lanes, or using traffic calming. It includes elements such as:

- Designing the project for the use of transit through, for example, allocation and design for the main transit terminal or in partnership with transit authority.
- Narrower, interconnecting streets with sidewalks and pedestrian cut-throughs.
- The use of traffic calming techniques.
- Dedicated cycle-lanes.
- Greenways, for hiking, cycling and horseback riding.
- Car-free residential areas, where people park their cars and walk to their homes.
- Overall trip reduction plans (also known as transport demand management).

AFFORDABLE HOUSING

Elements of affordable housing may include:

- Secondary suites, granny suites, garage conversions, live-above garages.
- Setting aside units for government affordable housing programs, or non-profit housing groups such as Habitat for Humanity.
- Co-housing.
- Paying a Development Cost Charge to finance construction of affordable units elsewhere, or following a 20% set-aside policy.
- Blending the affordable units in with the community as a whole.

LIVABLE COMMUNITY

Livable community, although often broadly defined, is used to refer to facilities such as parks, tot-lots, a community hall, or facilities for the arts, seniors or youth.

LOW IMPACT SEWAGE & STORMWATER TREATMENT

This refers to alternative approaches to the treatment of sewage and stormwater, such as natural swales, constructed wetlands & new sewage technologies. Elements include:

- Advanced sewage treatment systems.
- Source control programs against sewage contamination.
- Natural swales, in place of storm drains, and increased surface permeability.
- Constructed wetlands and green roofs (to retain water run-off, provide ecological habitat).

WATER CONSERVATION

This refers to aspects of the development focused on the efficient use of water. Elements include:

- Measures to encourage water efficiency, such as low flow shower heads and efficient appliances.
- Re-use of treated water for irrigation, & in toilets & urinals (via dual plumbing).
- Use of cisterns and other methods of reducing water use.

ENERGY EFFICIENCY

This refers to energy efficiency and the generation of alternative energy. Elements include:

- Energy efficient construction.
- Passive or active solar design.
- District heating & cooling systems (co-generation).
- Ground source heat extraction (pipes sunk down into the ground to extract the ambient heat for heating and cooling).
- Other forms of local energy generation, such as biomass and wind power.

THE 3 'R'S

This refers to encouraging the 3 Rs in a project (reduce, re-use, recycle), such as the use of environmentally sound building materials, in-house recycling systems, or construction wastes recycling. Elements include:

- Residential in-house waste recycling systems.

- A high level of construction wastes recycling.
- Community composting.
- The use of environmentally sound building materials.
- The use of local materials.
- Degree of control over builders, and the building process.

BETTER PLANNING
Covers the range of measures designed to improve the planning process, especially the linkage between neighbourhood, municipal and regional planning.

Adapted from: "Implementing Sustainable Community Development: Charting A Federal Role for the 21st Century", Peck, S; Tomalty, R.; Hercz, A.; Dauncey, G et al. (2000): CMHC, Ottawa. See Appendix I.

Appendix III: Survey Questionnaire

Description of the PAMs

Is there a document that lays out the numeric targets you use and what are they intended to measure or reflect? If so, can you send me a copy or are they available on the web site?

Developing the PAMs

Why did you adopt targets and what process was involved in formulating them?

Were the targets part of a larger planning process?

Who was driving the process and why?

Was there anyone resisting the introduction of targets and why?

What techniques did you use in choosing your targets?

Did you encounter any problems in the development of your targets?

Did the targets undergo changes during the process?

Using PAMs

How do the targets influence decision making in the municipality?

Are there any other ways through which the targets are implemented?

Have you encountered problems in the use of your targets?

Are you monitoring to determine if targets are being achieved?

Any problems related to monitoring?

Has this led to a change in the choice of targets, the measuring techniques?

Benefits/Uses/Impacts

What are the main benefits of having adopted targets?

Did using targets facilitate communication with the community, promote community participation in planning issues, or address NIMBY or other planning problems?

Have you used targets to negotiate with the development community or other economic actors?

Have the targets helped get the municipal bureaucracy on-side in terms of working towards sustainability?

Have the targets helped with the budgeting process or prioritizing expenditures?

Any other uses for the targets?

Would you say that the targets have accelerated or facilitated moving your community in a sustainable direction?

If so, can you provide some examples?

Has there been an assessment of the target system and its effectiveness? If so, what was the outcome and can I get a copy?

Costs/Disadvantages

What are the main disadvantages of having adopted targets?

How much did using targets add to your planning or operations costs or how much did they save you?

Lessons

Based on your experience, what advice can you offer communities considering the use of numeric targets in situations similar to yours?

What other situations do you think your experience would be relevant to?

What would you have done differently if you were to undertake the target process again?

Sources

Where did you get the information you used in developing your targets?

Were you aware of targets being used in other jurisdictions? If so, did this help you?

Closing

Are there other individuals involved in the planning process using targets that could give us a different perspective?

Would you like to be included as a contact for further information in the summary of this initiative in our report?

Appendix IV: List of Respondents Participating in Case Study Interviews

Don River Watershed

Downs, Deborah; Chair, Don Watershed Report Card Committee.
Freeman, Adele; Highland Watershed Specialists, Toronto and Region Conservation Authority.

Civano

Koenig, Ron; Project Manager, City of Tucson.
Nichols, Al; Al Nichols Engineering.
Raeburn, Lee; Developer, CDC Partners.

Hamilton-Wentworth

Bekkering, Mark; Coordinator, Vision 2020 (1993-1997).
Franco, Tara; Coordinator, Vision 2020 (current).Pierce, Bill; (former) Manager and Director, Development Team for Vision 2020.

Okotoks

Fields, Chris; Economic Development Officer, Town of Okotoks.
Moledina, Moez; President, Genstar Inc.

Santa Monica

Gold, Mark; Executive Director, Heal the Bay.
Kubani, Dean; City of Santa Monica Environmental Programs Division.

Southeast False Creek

Duncan, Alan; Senior Planner, Central Area Planning, City of Vancouver Planning Department July 2001.Holland, Mark; Consultant.
Mikkelsen, Dale; Central Area Planning, City of Vancouver Planning Department.
Moffat, Sebastian; Principal, Sheltair Scientific Inc.

Buffalo

DePalma, Karen A; Regional Projects Manager for Local Governance and Regional Growth.
Foster, Dr. Kate; Regional Project Manager, Institute for Local Governance and Regional Growth.
Sanford, Beverly; Co-Director, Institute for Local Governance and Regional Growth.

Other individuals contacted during the first phase of the research include:
Brett Vanakkren, US EPA.
Virginia Maclaren, UofT.
Wayne Bond, Environment Canada.
Fiona Crofton, Consultant, and
Michael Keating, Consultant.