



Ministry of Municipal Affairs & Housing



Association of Municipalities of Ontario

ONTARIO CENTRE FOR MUNICIPAL BEST PRACTICES

393 University Ave., Suite 1701, Toronto, Ontario M5G 1E6

BEST PRACTICE SUMMARY REPORT

RO – WC – 04 - 03

Roads – Winter Control – Experimentation with Shift Deployment Models

Practice Identification: Roads Winter Control – Experimentation with Shift
Deployment Models: 3-shift model

Case Study Municipality: City of Guelph

Key Word: Operational Procedures

Benefits which resulted from adoption of the Practice;

- **Improved event response times with no increase in cost**
- **Continuous improvement through shift structure experimentation and evaluation of results**

1. Description of the Practice in the Case-study Municipality

The City of Guelph delivers winter control services across a mixed road system consisting of more than 1,150 paved lane-kilometers in 2001. The system is maintained at a bare pavement standard for primary roads, centre-bare for secondary roads and snow-packed for local roads. Guelph provides a winter event response capacity featuring 10 of its own combination units, 21 contracted units and 4 wing plows (31 “response lane-kilometers” per unit). Full system clean-up is accomplished in 18 hours or less after the end of a winter event. System pass coverage rates were not tracked in 2001. Guelph’s 2001 MPMP winter control unit costs were among the lowest for comparable urban municipalities.

Decisions on how best to deploy winter control manpower (seasonal shift structures) are a critical driver of direct-delivery service costs and quality. The blend of winter control straight-time versus overtime service hours varies greatly across the municipal sector. Single shift, double shift, and three shift models are all in place. Local winter event conditions play a role in determining the optimal shift structure. The best practice is not a one-size-fits-all “perfect” shift structure, but rather experimenting with and learning from various shift options, in order to find one that is best suited to local conditions at the time.

In recent years, the City of Guelph has experimented with a 24/7 three-shift model, a 24/5 two-shift model, and is now using a 24/5 three-shift model. Guelph evaluated its traditional 24/7 three-shift model, and found it lacking from a cost-benefit perspective. The fixed staffing costs resulting from three shifts every day of the week did not appear to be applied against enough storm responses to merit continuation. A 24/5 two-shift model (featuring reduced staffing) was implemented as a cost reduction option. However, the overtime costs incurred by the City in this model were unacceptably high during the late afternoon hours between the two shifts (almost 40% of total winter control overtime). Through experimentation, the City had discovered it had become too lean across its weekday 24-hour service period. Event response times were degrading because of increased call-outs and the resulting lag times. Therefore, the two-shift approach has been discarded and a revised 24/5 three-shift model is currently being used.

The overtime avoidance savings generated by the new weekday three-shift model have financed the hiring of the additional operators for the reintroduction of the weekday third shift, and event response times have been restored to desired levels. Anti-icing treatment on Fridays reduces the need for and frequency of weekend overtime call-outs.

This shift deployment practice has yielded lower winter costs (vis-à-vis the 24/7 three-shift model) and more acceptable service (vis-a-vis the 24/5 two-shift model) in the Guelph situation.

2. Evaluation of Practice

Efficiency:

Guelph has achieved low winter costs in comparison with similar municipalities. It has done so by a process of carefully considered trial and error, followed by learning and evaluation, supported by results measurement.

Effectiveness:

Guelph has arrived at a shift structure which it is right for it at this point in time, insofar as it has delivered measurable improvement in terms of costs and event response times - given distinct local weather conditions and locally defined service level expectations.

3. Replication of the Practice

A continuous improvement process that can evaluate current staffing model performance by analyzing historical patterns of overtime costs and the impact of call outs on event response times is realistic and practical for most mid-size and large municipalities.

Most collective bargaining situations will allow for multi-shift deployment of municipal staff at straight time rates during weekdays. A willingness to experiment, analyze results, and embrace new solutions is the sole requirement in terms of organizational culture.

4. Contacts

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NOTE: see RO – WC – 04 – Methodology Report, for a description of the practice identification methodology, using 2001 MPMP data.