



Outsourcing Contract Terms Offer Insights Into Better Managing Snowfighting

In North America as in the rest of the world, most streets and highways are owned and operated by governmental agencies. When snow and ice control are required, employees of those agencies, for the most part, operate agency-owned equipment to plow the roadways and apply materials to preserve or restore safe driving conditions.

Over the past couple decades, citizen demands to curtail taxes and demonstrate cost-effectiveness in delivering public services have spawned an age of accountability that has swept over the management of all public works activities. Private delivery systems have been touted as a means of improving customer service and controlling costs.

In other areas of public works, pioneered in the area of solid waste collection and disposal a generation ago, public agencies contract with private companies to provide services otherwise performed by their own employees. In snowfighting, until recent years, such contracts were often limited to mobilizing supplemental resources when storms overwhelmed agency personnel or equipment. More and more, however, and particularly in Canada, contracting for winter maintenance has become commonplace.

Two key lessons learned by public works managers from their experience in contracting for solid waste services are, first, that there are times when keeping some or all of the function in-house makes sense and, second, that the management and information systems required for effective contracting-out can be equally valuable in better understanding the total costs and more effectively allocating resources even

when the service is performed using agency crews and equipment.

There is much to learn from a study of *Best Practices of Outsourcing Winter Maintenance Services*—coincidentally the title of a report issued last year by VMS, Inc., perhaps the largest private sector highway operations contractor in the U.S.



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The experience and perspective of this report are of great value to elected public officials who provide the resources and overall policy for delivering a government's service to its citizens. And also to public works professional anxious to implement performance management systems that demonstrate effective provision of services to meet or exceed the expectations of their "customers" (i.e. taxpayers, motorists and highway-dependent commercial interests). The report also offers insight and instruction to would-be private sector contractors on those steps they need to take to be an attractive alterna-

tive to agencies' use of their internal equipment and personnel. As the report indicates, private firms often lack skill, expertise and experience in winter maintenance since they are often an afterthought of highway construction contractors whose workforce operates dump trucks and steamrollers during the other three seasons of the year (but the availability of this workforce is often questionable because generous unemployment benefit programs can often be tapped by construction workers who have accumulated significant overtime).

Rod Pletan and Dick Stapp conducted the study for VMS, compiling responses about outsourcing winter maintenance from over 70 different agencies in 40 states, 8 cities and 3 toll/turnpike authorities. The report gives the authors' views of the best and most creative contract language and provisions that are being used by public sector owner-agencies today.

The report's key finding: "...contracts should be written to include both income level performance measurements and outcome based pay items." In short, the report dismisses management of **inputs** and even management of **outputs**. It focuses on how **outcomes** "lead to **value** as measured by the customer" (emphasis in the original).

For snowfighting, what, exactly, does this mean? They explain:

"**INPUTS** are resources like labor hours, equipment hours, material units, etc. and the monies expended for using these resources.

"**OUTPUTS** are accomplishments like lane-miles/kilometers plowed,

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lane-miles/kilometers sanded, trucks equipped, etc.

“**OUTCOMES** are bareness of pavement, reaction time, friction, reduction in accidents, duration and frequency of closures or chain ups, advance warning time to customers, etc.

“**VALUE** to the customer are issues like comfort, satisfaction, feeling of security, being able to travel when and where one wants to (access), being able to travel at own speed (mobility), advance knowledge of what to expect, etc.”

In the past, managers have tended to *count* quantitative inputs or outputs. The new management paradigm requires policy-makers and managers to *measure* qualitative outcomes and values (which need to be aligned so that changes in outcomes directly reflect changes in customers' perceived value of the service). As an example, Minnesota DOT uses an outcome/performance measure, a photo/narrative combination to measure crews against a “Regain Time” standard that is the time from the end of the event until bare lanes are obtained. Sweden uses a variant, stipulating that their “highest volume road shall be free from snow and ice no later than two hours after the snow has stopped falling if the road surface temperature is above -8 degrees C (18 degrees F). Further, during the period when the snow is actually falling, the depth of snow shall not exceed 2 cm (0.8 in.) and slush depth shall never be more than 1 cm (0.4 in.)”

It should be obvious, that the outcomes/value measurement approach has equal value for in-house performance management as well as utility in judging (and compensating) contractor performance.

In the past, contractors have been rewarded on the basis of inputs or, better but still inadequate, outputs. Contractors would be paid based on how many hours they operated their trucks or how many tons of salt they applied (inputs) or number of lane-miles maintained or number of storms called out or rounds made (outputs).

The new philosophy advocated in the VMS report focuses on outcomes (which are tied to value as perceived by the customers). Virginia DOT pays VMS an annual fee, for example, to re-

store bare pavement within 24 hours after every storm - no matter how many storms, how long they last, how much material is applied, etc. Kansas City, MO contractors are also paid lump sums, but on a route-by-route basis, for servicing residential neighborhoods. The Maine DOT performance specification states: “The contractor shall schedule his work such that by noon of the day following the end of the storm, three and a half (3 1/2) feet of the pavement will be exposed on each side of the centerline.”

More common than the pure “outcomes” contracts, however, are hybrids of “input level *pay items* with output or outcome level *expectations*. For example, a contractor may be required to have his equipment report to work within a specified period of time after being called (**outcome** based work accomplishment) but he is reimbursed for the time the equipment is used plowing snow (**input** based).”



■ Agencies are beginning to shift more risk to their service providers.

Contracts are the means of determining and rewarding performance, but, as the above examples suggest, they also serve to assign risk. No one likes risks, obviously. Politicians understand that whatever the means adopted to deliver service, customer satisfaction (or dissatisfaction!) will be laid at the feet of the elected officials who “own” the roadway - no matter whether their own employees or contractors are actually providing the service. To date, most contracts have transferred little risk to contractors - often to their great relief. Agencies, however, the study found, are beginning to shift more risk to their contract service providers - and this is working because private sector firms are now in-

vesting more heavily in training their crews and building the professionalism of their winter maintenance operations (just as most of them have long-since infused in their regular construction operations). The adage “to whom much is given, much is expected” comes into play - contractors assuming more risks will expect to be compensated for those risks.

The authors summarize the “best practices” of performance-based winter maintenance contracting. Whether an agency contracts the work or does it themselves, the principles have equal validity. These “best practices” include:

“Best practices are those that address the fact that the private sector workforce may not be fully available and trained, but clear contractual language is included that ultimately places the responsibility on the private sector to develop, train and equip its own personnel as well as bear most of the risk associated with fluctuating winter weather year to year.

Best practices are those that understand the importance of contractors having an approved Snow and Ice Plan but confine contractual language to measurable outcome-based performance measures with payment for work correlated with measured performance achieved.

Best practices include insisting that everything possible is done to connect the producer to the user-customer as opposed to the producer simply doing work for the owner-agency (or a contractor representing the owner).

Best practices are those that generate a strong willingness and desire on the part of the private sector to conduct its own R&D as a means of maintaining its own competitiveness and becoming most effective and efficient in producing defined and measured outcomes.

Best practices are those where producers benefit from proactively responding to RWIS based predictions of road surface conditions and are encouraged to utilize anti-icing and other preventive methodologies to more expeditiously meet customer expectations. Best practices seek ways for such advancements in knowledge to be

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transferred and shared as much as possible throughout the entire industry as if it were public knowledge.

Best practices uses contract language that maximizes the opportunity and responsibility for the private sector to prove that they can be responsive, efficient and/or effective in producing winter maintenance services to the public. After all, if they do not, the owner-agency will ultimately be responsible for initiating corrective action anyway."

Source — *Best Practices of Outsourcing Winter Maintenance Services, Research Project sponsored and funded by VMS, Inc., Richmond VA. Project Manager Robert H. Bourdon, P.E. July 1, 2001.*

Guide For Selecting Anti-Icing Chemicals Available

The chair of the Transportation Research Board's Winter Maintenance Committee, Wilfred A. Nixon, and co-author Anissa D. Williams, both of the University of Iowa, have just released their initial version of an expected evolutionary volume *Guide for Selecting Anti-Icing Chemicals*:

(online: www.anti-ice-guide.com).

The Guide identifies the important performance considerations agencies should use in selecting an anti-icing chemical, provides a metric to grade and compares chemicals, customizing the results by variously weighting each factor. The factors include: freeze point depression (salt receives a letter grade of D here; CMA even lower), consistency (salt receives an A here because of its consistent quality when used to

make a salt brine), environmental impact (composed of a series of tests of nitrogen levels, BOD, COD, toxicity and presence of heavy metals), stability (salt would receive an A here for its suppliers' willingness to warrant continuing effectiveness over a two year period), corrosion compared to distilled water (salt would earn only a D here), ease of use and of storage (salt earns an A grade in both categories), conductivity, and documentation of the composition of the material (salt again earns an A grade). The Guide does not consider cost or availability. Nixon notes, "The guide is NOT meant to be a finished document." The website invites feedback. Next step: developing software to automate the process described in the Guide.

Media Hyped Stories On "Highway Salt Shortage" Salt Industry Said "We've Got Salt"

"Governments bracing for slick roads this winter are faced with a shortage of rock salt, caused by heavy demand lingering from last year's harsh winter in the Great Lakes region," the Associated Press reported prior to last winter. Reporters were calling the Salt Institute daily seeking an explanation for local agencies' frustration at their inability to attract bidders for their highway salt needs for the coming winter. Some stories pillory the salt industry, others lambast local officials. Typical of the latter is this from the *Detroit Free Press*: "Local governments that delayed buying road salt for winter are learning the price of procrastination. In some cases, it's hundreds of thousands of dollars. And the situation is even worse for some communities that cannot get salt suppliers to even submit bids." While some agencies feared they wouldn't have enough salt to keep their roads safe, others reported being well prepared. "Despite supply shortages elsewhere in the country, most cities in (Illinois) appear to be well-stocked with de-icing salt for the upcoming winter season," reported the Peoria (IL) *Journal Star*. "That's because many obtain road salt through the state of Illinois, which requires suppliers to deliver salt at the beginning of winter, said a spokeswoman for the agency responsible for the group bid."

In October and November, 2002, newspaper headlines in some areas continued to express grave concern that there would be enough salt for the upcoming season since last year's harsh winter caught so many communities under-prepared. New data show that U.S. highway salt production and imports are up for this winter - way up! A Salt Institute survey conducted in response to public concerns about inadequate salt supplies found that in the period April 1 - November 30, 2002, U.S. salt companies produced 7.2% more than in the same period of 2000 and increased imports by more than one-third, 38.6%. Highway salt production for this eight-month period totaled 7,459,053 tons compared to 6,956,600 tons for the same period in 2000. Highway salt imports during the period were 4,394,020 tons compared to 3,169,640 tons in 2000. All but one salt company reported its production facilities running at 100% of capacity; the other company is running at 90%. Overall, highway salt is being produced at 98% of capacity.

Partners: SI And National LTAP To Produce, Promote Snowfighter Training

The National Local Technical Assistance Program Association (NLTAPA) and the Salt Institute (SI) have agreed to a formal partnership, working together to foster a safe, efficient, and environmentally sound winter roadway maintenance program. The LTAPs provide training, technical assistance and technology transfer to equip and motivate roadway maintenance agency personnel to use. Under the agreement approved by the NLTAPA board, SI will continue to develop training materials, but they will be produced for online distribution to professional trainers, not printed materials for distribution directly to operating personnel. Trainers will have the option of printing the materials and customizing them as needed for their audiences. The first two PowerPoint presentations and a series of seminar handouts have already been produced by the SI/LTAP partners; this agreement "formalizes and extends the good working relationship which we have with LTAP trainers," explained SI President Richard L. Hanneman. Three key goals are: improve the quality and variety of curriculum materials available for winter maintenance training; improve

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the effectiveness of winter maintenance training, technical assistance, and technology transfer; and expand the availability of winter maintenance training and the number of agency personnel who are trained in best management practices. Implementation begins immediately with an LTAP advisory committee assisting in the development of the new materials.

Life Gets More Complicated For Snowfighting Planners...MgCL Problems Targeted By Railroads And Truckers

Just as some agencies avoid spreading sodium chloride on certain bridges and use an alternative, Union Pacific (UP) Railroad says don't use this "alternative" near railroads. In an Oct. 18, 2001 e-mail, Susan K. Grabler, with UP wrote, "It is that time of year again when the snow is ready to fly and create problems for us all. UP Railroad would appreciate it if you both could advise your respective Statewide Maintenance personnel that the mag-chloride applications around railroad crossings create serious problems with Railroad Signal Systems at highway/railroad crossings. We would appreciate it if you would not apply any mag-chloride applications within 300 feet of any railroad crossing." This request by Grabler has created substantial debate by winter operations personnel on the specifics and real solutions to UP's concerns.

In an article in the September, 2001 issue of *Heavy Duty Trucking* entitled "Killer Chemicals - What States Are Using to De-ice Roads is Ruining Your

Equipment...Magnesium Chloride: A Miracle Corrodes," the magazine warns: "Truckers, who face the greatest exposure, are saying that mag chloride packs a killer punch. They have found that its corrosive properties are eating away at vital components." Some fleets have reported mag chloride exposed wiring systems which are deteriorating



■ "Mag-chloride applications at railroad crossings create serious problems with Railroad Signal Systems"

at an "alarming rate," eating away the copper wiring. "We're only at the beginning of the problem," says Greg Fulton, president of the Colorado Motor Carriers Assn. The article observes that salt - sodium chloride - has been deicing winter roads since the early 1930s and it very quickly became the deicer of choice. "Years of testing by car and truck manufacturers has seen the development of paints and other surface protections that keep the worst ravages at bay" for sodium chloride, the article says, distinguishing among chloride deicers.

Salt Institute Calls For 2002 Excellence In Storage Award Applications

Applications for the year 2002 competition may be obtained from the Salt Institute's web page:

www.saltinstitute.org/40.html

or contacting the Institute at:

700 N. Fairfax St., Suite 600,
Alexandria, VA 22314-2040

703/549-4648, fax 703/548-2194

or e-mail: info@saltinstitute.org.

Facilities must have been in operation one full year to qualify for entering the Excellence In Storage Award contest. Deadline for completed applications is May 4, 2002.

SI Winter Maintenance Web Pages For Quick, On-Line Information

When was the last time you checked out these important winter maintenance web pages to help with training, keeping up with the latest in winter maintenance, or to check the latest news coverage of winter maintenance issues? These web pages are updated if not daily, then weekly. Take a minute to review them and bookmark the ones that you will want to go back to for future access and use.

www.saltinstitute.org/30.html – Highway Deicing and Anti-icing for Safety and Mobility

www.saltinstitute.org/48.html – Media stories about winter highways

www.saltinstitute.org/snowfighting – Snowfighters Training



Salt Institute

700 North Fairfax Street
Fairfax Plaza, Suite 600
Alexandria, VA 22314-2040

Voice : 703 / 549-4648
Fax : 703 / 548-2194 Fax
Web Site : <http://www.saltinstitute.org>
e-mail : info@saltinstitute.org

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