



WIT Advisers
empowering sustainability
Landscape and Winter Management Solutions

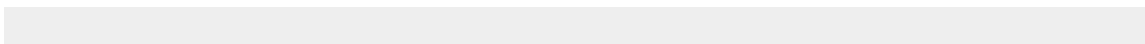
Sustainable Winter Management Guide SWiM®

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BENEFITS OF SWiM®



Saves Money – The SWiM® Program has helped prevent delayed business openings and access to roads and parking, protecting revenues and controlling costs.



Reduces Risk – SWiM® has helped control icy and snowy surfaces to reduce slip & fall incidents and auto accidents.



Protects Environment – SWiM® Certification enables best-in-class practices to minimize the environmental impacts of road salt use.

About SWiM®

Sustainable Winter Management (SWiM®) was conceived by Phill Sexton, founder of WIT Advisers, and was formalized in his thesis research at Harvard University. The principals of SWiM® were developed from the founder's practical experience as a snow and ice management professional for over 30 years and through his formal education in sustainability, innovation and environmental management. Today, public and private organizations throughout North America utilize SWiM® to enable a better way of doing business and for managing winter snow & ice operations.



SUSTAINABLE WINTER MANAGEMENT

SWiM guidelines help keep snow, ice and your costs under control



BY PHILL SEXTON,
CSP, ASM

Winter weather stresses road, parking lot and sidewalk conditions. Cost control, risk management, rising expectations for sustainable practices and near perfect conditions are realistic challenges that snow and ice management professionals and facility managers face. Liability linked to the overuse of deicing salts is a new challenge the snow and ice management industry must address head on. Furthermore, the expectations for “green” and “sustainable” alternatives are on the rise.

Since a multitude of research studies have validated that much of non-point source chloride contamination of freshwater bodies and aquifers originates from parking surfaces, facility managers and their snow and ice contractors need to be prepared for

No. of Parking Spaces	Cost per Parking Space	SWiM Certified?	Other Factors
884	\$365.72	No	Landscape damage replacements exceeded \$25k (due to salt damage)
832	\$271.29	Yes	Slip & fall incidents decreased and no landscape damage
322	\$367.15	No	Slip & fall incidents increased
327	\$286.32	Yes	No increase in slip & fall incidents

CASE STUDY: Case study of SWiM-certified parking lots compared with non-certified parking lots. View the RIT / NYSP2I case study at <https://tinyurl.com/rit-nysp2>.

future regulations and liability linked to their use of deicing salts to control slippery winter conditions.

The Sustainable Winter Management (SWiM) program guidelines (www.witadvisers.com/swim), which integrate SIMA's best practices (www.sima.org/bestpractices), are available for snow and ice management operators and facility managers to follow. Unlike sustainability initiatives that typically cost more money to

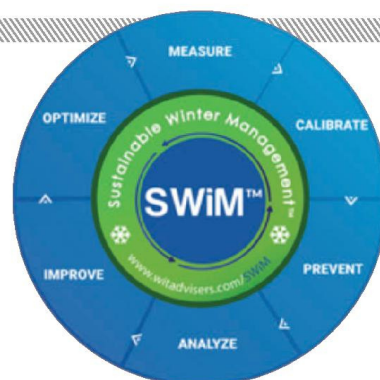
initiate, the benefits to properties that follow SWiM guidelines include saving money, managing risk and reducing salt use. Achieving these results also benefits the environment and your reputation.

Although SWiM audit guidelines include over 100 criteria that must be met for properties to earn SWiM certification, the policies are easily available to companies that want to follow the standards of practice.

EDITOR'S NOTE: This article is the first in a series that will discuss policy, methodologies and environmental stewardship through the lens of sustainability as it applies to winter management operations. In each issue, we will explain in more detail the six categories of SWiM policy standards:

- Measure what you want to improve
- Calibrate equipment capacity, manpower, response times, salt and other materials
- Prevent bonding of snow and ice, waste, re-work and safety incidents
- Analyze Level of Service, data and variances

- Improve safety, Level of Service, productivity
- Optimize equipment, materials, time and data



Case study

Researchers with the Rochester Institute of Technology (RIT) and the New York State Pollution Prevention Institute (NYSP2I) assessed SWiM program results for a multi-location retail property owner in the snow belt region of Syracuse, NY, during the 2017-18 winter. The results validate significant cost, risk and environmental benefits.

In this case study, researchers compared two sets of retail store properties owned by the same company, with the same level of



SUSTAINABILITY

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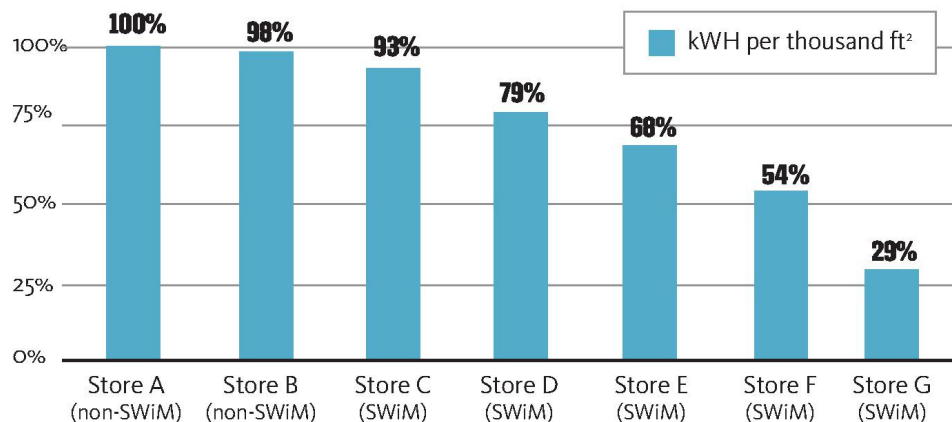
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service (LOS) expectations, virtually the same parking space quantity and footprint, and located a few miles from each other. One set of stores followed SWiM guidelines, and one did not.

The properties that did not follow SWiM saw increases in slip and fall incidents or extensive landscape damage. Furthermore, the case study analyses suggest the SWiM properties were more efficiently serviced as seen by a 50 percent reduction in salting trips on average compared to stores serviced with traditional plowing and salting methods. This results in a reduction of energy usage and global warming potential between 7 percent and 71 percent, depending on the store.

Whether the site, road or sidewalk setting is retail or office, public or private, the standards of policy are consistent for developing a sustainable winter management program.

NORMALIZED CUMULATIVE ENERGY DEMAND & GLOBAL WARMING POTENTIAL



Note: kWh = kilowatt hour; ft² = square feet

Following SWiM guidelines in their proper order and holding maintenance operations accountable to continuously implement the SWiM standards of practices are important to achieve similar results and benefits. **SB**

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Measure Your Opportunity

First Step In SWiM® Policy

Using the Sustainable Winter Management

(SWiM®) Model,

“Measure” is the first step that enables you to identify opportunities for improvement, which may include equipment, labor efficiencies or savings in the cost and amount of materials, including deicing salt applications.

AREA

Measure the square footage and acreage of parking lot(s), sidewalks and lane miles of roadways.

RATES

It's important to always measure surface temperatures (in addition to air temperatures) when deciding which application rates to utilize miles of roadways.

OUTPUT

Measure salt application rate output per application. Salt measuring technology makes measuring salt application easy & affordable.

LEVEL OF SERVICE (LOS)

It's important to understand when LOS expectations are being met and when they are perhaps being over-served, which typically includes over-applying salt.



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WINTER INFRASTRUCTURE TECHNOLOGIES

Measure your opportunity

First step in SWiM policy clears the path to continuous improvement



BY PHILL SEXTON,
CSP, ASM

This same policy applies whether you are managing parking lot or roadway conditions.

What to measure

Area. Measure the square footage and acreage of parking lot(s), sidewalks and lane miles of roadways. Compare your production and application rates with industry guidelines, such as those published by SIMA. For example, the SIMA guidelines include scenarios of average times required for plowing an acre of parking lot, shoveling 1,000 linear feet of sidewalk and the average quantity of time and salt required for anti-icing and deicing applications.

Rates. Salt application rate guidelines have been established through the Sustainable Salt Initiative. It's important to always measure surface temperatures (in addition to air temperatures) when deciding which application rates to utilize.

Output. Measure salt application rate output per application. Salt measuring technology and cloud-based, GPS-enabled tracking software, are available that makes measuring salt applications easy and affordable.

Level of Service (LOS). Measure LOS expectations and results. This can be achieved using site cameras or assigning

→ SIMA members can access the production rate guidelines by logging in at my.sima.org

Application rate guidelines are available at www.witadvisers.com/sustainable-salt-initiative

someone to visually observe and document snow operations, including pictures for reference. It's important to understand when LOS expectations are being met and when they are perhaps being over-served, which typically includes over-applying salt.

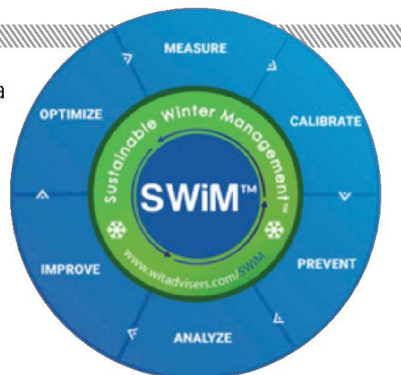
Improvement initiatives

A CI process utilizing SWiM measuring guidelines and tools provides opportunities for companies to develop improvement initiatives throughout winter management operation, including reducing safety incidents, increasing material usage efficiency and inventory tracking, improving LOS and quality performance, and growing profit by focusing on wasted expenses and production efficiencies you can identify when you measure and compare hours.

Regardless of property type, the standards of policy are consistent for developing a sustainable winter management program. Following the SWiM guidelines in their proper order, by beginning with "Measure" and holding maintenance operations accountable to continuously implement the SWiM standards of practices, are important to manage for achieving similar results and benefits. **SB**

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CALIBRATION: IT'S NOT JUST FOR SALT

IT CAN ALSO BENEFIT SNOW OPERATIONS & TEAM MANAGEMENT



SALT OUTPUT CALIBRATION

is necessary for applying responsible salt application rates, saving money and reducing material waste. Furthermore, the reduction of road salt runoff from entering the environment is an urgent issue for us as an industry to understand and buy into. Chloridebased salts are clearly defined as a pollutant by the Environmental Protection Agency. As an industry, we need to prevent as much of this pollutant as possible from entering soil and freshwater sources.



WORKFORCE DEVELOPMENT AND RECRUITING

includes implementing a succession process for upwardly mobile, talented people who are ready for increased responsibilities, knowledge and leadership. Likewise, there needs to be a thoughtful plan that is constantly reviewed and revised that takes into account the natural attrition of employees, business growth and the occasional parting of ways with people who aren't a healthy fit in your organization's culture.



RESOURCE PROCUREMENT AND ALLOCATION

primarily includes calibrating equipment and materials acquisition needs for each client and their corresponding scopes of work (SOW) and level of service (LOS) expectations. Calibrating the timing of purchases and rentals with historical weather timing is a critical first step to preventing beginning or end-of-season service failures in case of early or late winter storms. Keep in mind over the past 10 years, there have been at least 3 years when significant plowable snow events have occurred at the end of October for many states throughout the Great Lakes, Northeast and New England.



STORM RESPONSE TIMING AND DISPATCHING

should include the integration of a weather forecasting service or technology. Having the ability to reasonably anticipate storm event timing that can be calibrated with timing crew dispatching, and mobilization of equipment, is an important SWiM guideline to integrate. If you are relying on TV weather stations as your only source of forecasting, then it is time elevate your operation to the next level by engaging with historical and real time weather forecast resources that are now more reasonably affordable to the industry at large.



A SERVICE VERIFICATION PROCESS

calibrates categories of information and data to document, collection methods and technology that enables efficient documentation and data collection. Although traditional paper methods for documenting and verifying services performed are still widely practiced and accepted, SWiM guidelines encourage advanced processes and technology that calibrate a) the acquisition of real time site/road conditions including air and surface temperatures, b) GPSenabled production and material tracking, and c) pictures/video of conditions that are available as both real time and historical recall.



Calibration: It's not just for salt

It can also benefit snow operations, team management



BY PHILL SEXTON,
CSP, ASM

In winter management operations, calibration typically refers to application rates for road salt output (a critically important process snow and ice management operations should integrate into their standard operations procedures). But it is just one of several service/operational areas of your business that may need calibrated. Utilizing SWiM guidelines, here are the top five to consider in the continuous improvement process:

1 Salt output calibration is necessary for applying responsible salt application rates, saving money and reducing material waste. Furthermore, the reduction of road salt runoff from entering the environment is an urgent issue for us as an industry to understand and buy into. Chloride-based salts are clearly defined as a pollutant by the Environmental Protection Agency. As an industry, we need to prevent as much of this pollutant as possible from entering soil and freshwater sources.

2 Workforce development and recruiting includes implementing a succession process for upwardly mobile, talented people who are ready for increased responsibilities,



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knowledge and leadership. Likewise, there needs to be a thoughtful plan that is constantly reviewed and revised that takes into account the natural attrition of employees, business growth and the occasional parting of ways with people who aren't a healthy fit in your organization's culture.

3 Resource procurement and allocation primarily includes calibrating equipment and materials acquisition needs for each client and their corresponding scopes of work (SOW) and level of service (LOS) expectations. Calibrating the timing of purchases and rentals with historical weather timing is a critical first step to preventing beginning or end-of-season service failures in case of early or late winter storms. Keep in mind over the past 10 years, there have been at least 3 years

when significant plowable snow events have occurred at the end of October for many states throughout the Great Lakes, Northeast and New England.

4 Storm response timing and dispatching should include the integration of a weather forecasting service or technology. Having the ability to reasonably anticipate storm event timing that can be calibrated with timing crew dispatching, and mobilization of equipment, is an important SWiM guideline to integrate. If you are relying on TV weather stations as your only source of forecasting, then it is time elevate your operation to the next level by engaging with historical and real time weather forecast resources that are now more reasonably affordable to the industry at large.

Other SWiM calibration guidelines for salt use to consider:

- **Establish reduction targets** for calibrating salt waste and cost savings. Before you can reduce, you must first establish a target you and your teams can shoot for. The target you choose is always more reliable and realistic once you've invested the time and equipment to measure (SWiM policy #1) what you are applying.

- **Benchmarking the salt application rates** you calibrate with the Sustainable Salt Initiative (SSI) research. For the past 3 seasons, WIT Advisers, Viaesys and SIMA have partnered to measure salt application rates being applied throughout several Great Lakes regions. Application rates for more than 500,000 tons of sodium chloride applied on more than 2,000 properties and greater than 1,000 lane miles have been validated by measuring solid salt output with a consistent and automated salt tracking technology.

<https://witadvisers.com/sustainable-salt-initiative/>

5 A service verification process calibrates categories of information and data to document, collection methods and technology that enables efficient documentation and data collection. Although traditional paper methods for documenting and verifying services performed are still widely practiced and accepted, SWiM guidelines encourage advanced processes and technology that calibrate a) the acquisition of real time site/road conditions including air and surface temperatures, b) GPS-enabled production and material tracking, and c) pictures/video of conditions that are available as both real time and historical recall.

Calibration is a methodology to follow for standardizing consistency in your results and for enabling continuous improvement. When you integrate the calibrate policy and other SWiM guidelines into your operations, you will surely standardize success in your business or operation. **SB**

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PREVENT DEFENSE

Managing risk, profits and reputation



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ANTI-ICING

IS A KEY METHOD FOR PREVENTING SNOW AND ICE FROM BONDING TO PAVED SURFACES.

The most efficient, productive and reliable method for implementing an anti-icing policy is to apply salt brine and other liquid applications before snow accumulates.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

INCLUDES PERSONAL RESPONSIBILITY FOR YOUR “3 E’S” — EYES, EARS AND EXTREMITIES.

All personnel that work or manage snow field operations should be provided eye and ear protection and the proper warm and wet weather clothing.

HAZARD ASSESSMENT

PROCESSES AND REPAIRS INCLUDE PRESEASON, PRE-STORM AND POST-STORM IMPLEMENTATION.

Look for things that will hurt you and things you or your equipment will hurt, such as:

- Raised surfaces / expansion joints
- Obstacles that require marking or staking to avoid when snow-covered
- Low-hanging objects, tree branches, and structures
- Emergency access / egress areas
- Melt and refreeze areas

SPECIFICATIONS AND CONTRACT TERMS

INCENTIVIZE EFFICIENT PRODUCTION AND MATERIAL/SALT USE. IT IS REQUIRED FOR SWIM® SITE CERTIFICATION

Contracts or specifications that compensate for quantities of time, frequencies and materials do not enable efficiency.

RESERVE THROUGHPUT CAPACITY

THIS IS A REQUIRED SWIM® GUIDELINE

This Guideline addresses two primary issues that generally occur in the industry, even to the best of companies with the best plans for recruiting, staffing and retention: Equipment reserves to replace down equipment due to mechanical failures and “no call / no show” operators.

TRAINING

FOUNDATION FOR ENABLING PREVENTION AND OTHER SWIM® GUIDELINES.

Conducting daily and weekly training sessions are essential ingredients to success. Some of the best-developed training content can be delivered in five minutes or less in person or remote/online training on a daily/weekly basis.

Prevent defense

Managing risk, profits and reputation



BY PHILL SEXTON,
CSP, ASM

Prevention in winter management operations typically refers to methods used to preventing the bond of snow and ice to paved surfaces. There are several areas where a snow and ice management operation can consider employing standards for prevention. The following are the SWiM standards for prevention:

1 Anti-icing is a key method for preventing snow and ice from bonding to paved surfaces. The most efficient, productive and reliable method for implementing an anti-icing policy is to apply salt brine and other liquid applications before snow accumulates. Although anti-icing can be achieved with the use of solid salt applied to surfaces prior to the start of snow accumulation, brine is a required SWiM guideline.

2 Personal protective equipment (PPE) includes personal responsibility for your “3 E’s” — eyes, ears and extremities. All personnel that work or manage snow field operations should be provided eye and ear protection and the proper warm and wet weather clothing.

3 Hazard assessment processes and repairs include preseason, pre-storm and post-storm implementation. Operators need to know what they are looking for at the start of a season and before working each storm event. Look for things that will hurt you and things you or your equipment will hurt, such as:

- Raised surfaces / expansion joints
- Obstacles that require marking or staking to avoid when snow-covered
- Low-hanging objects, tree branches, and structures
- Emergency access / egress areas
- Melt and refreeze areas

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4 Specifications and contract terms that incentivize efficient production and material/salt use is required for SWiM SITE certification. Contracts or specifications that compensate for quantities of time, frequencies and materials do not enable efficiency. The goal is for specifications that compensate for a performance result and prevent waste by eliminating budgets and payment structures that are solely based on quantities of time and materials.

5 Reserve throughput capacity is a required SWiM guideline that addresses two primary issues that generally occur in the industry, even to the best of companies with the best plans for recruiting, staffing and retention: Equipment reserves to replace down equipment due to mechanical failures and “no call / no show” operators.

6 Training is foundational for enabling prevention and other SWiM guidelines. Conducting daily and weekly training sessions are essential ingredients to success. Some of the best-developed training content can be delivered in five minutes or less in person or remote/online training on a daily/weekly basis.

The timing and cadence of your

- **Analyze** Level of service, data and variances
- **Improve** safety, level of service, productivity
- **Optimize** equipment, materials, time and data



MINIMUM TRAINING RECOMMENDATIONS

There is a minimum of four training categories for winter management: safety, science, equipment and techniques/engineering. Training in some form should be structured accordingly:

- **Preseason:** What you need to know
- **Pre- and post-event:** What you need to do
- **Postseason:** What lessons were learned

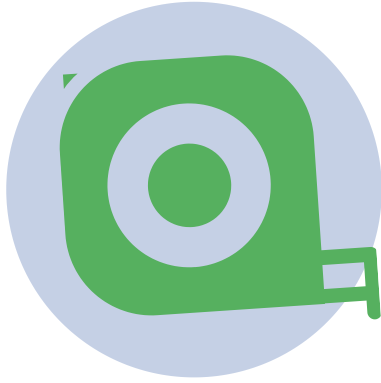
training is primarily up to you within the policies and goals of your organization. SWiM recommends weekly training for each of the four training categories.

To manage risk, continuously improve and enable sustainability in any business or organization, “Prevent” and other SWiM guidelines are designed to help get you started with a simple set of criteria. It’s up to you how you want to build from it. The sky’s the limit. **SB**

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STANDARD ANALYSIS

INCREASE YOUR ABILITY TO MANAGE RISK & ENABLE
CONTINUOUS IMPROVEMENT

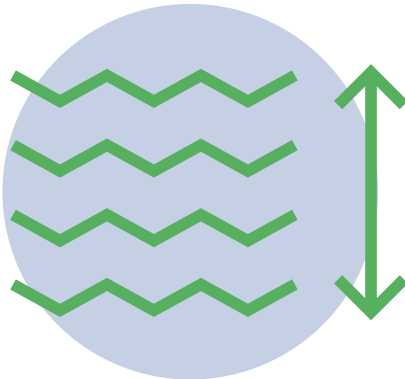


ANALYZE PER EVENT

Material Outputs should be analyzed per event, per vehicle, per operator. How you measure the type and form of this material will have a direct bearing on how easy or difficult it is to capture and automate the data being analyzed.

FIGURE STOP & STARTS

Analyzing productions starts with tracking times for primary operations, such as anti-icing, plowing, de-icing, travel, loading & unloading and other job costs.

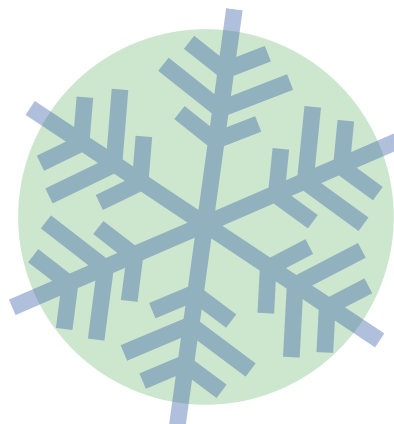


TRACKING LEVELS

Client and end user feedback is foundational measurement to analyze, including use of surveys, tracking complaints and other feedback data.

SWIM® GUIDELINES

MEASURE
CALIBRATE
PREVENT
ANALYZE
IMPROVE
OPTIMIZE



Standard analysis

Increase your ability to manage risk and enable continuous improvement



BY PHILL SEXTON,
CSP, ASM

Analysis in winter management operations typically refers to how we analyze snow and ice conditions on paved surfaces we manage during snowy winter months. There are several areas of a snow and ice management operation to consider employing standards for analysis. The top five SWiM guidelines to include as a standard set of policies for analyzing your snow and ice management operation:

1 Analyze per event. Material outputs and inventories should be analyzed per event, per vehicle and per operator. How you measure the type (e.g., rock salt, etc.), and form (e.g., bulk, bagged, etc.) of this material will have direct bearing on how easy or difficult it is to capture and automate the data to be analyzed. Tracking with an aftermarket salt tracking GPS-enabled technology or from a salt spreader manufacturer's optional tracking equipment will enable an easier, reliable and more efficient option compared to traditional methods that are typically performed manually and with paper tracking.

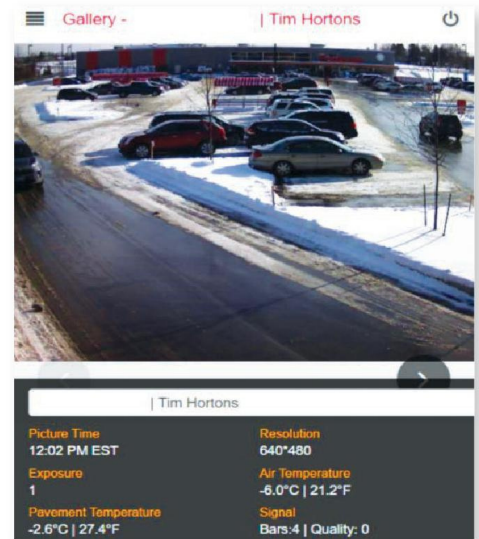
Date and Time in	Date and Time out		Quantity	Duration
21 Nov 2018 at 21:30	21 Nov 2018 at 21:32	Truck 413	95	0.02
21 Nov 2018 at 06:39	21 Nov 2018 at 06:41	Truck 413	146	0.03
21 Nov 2018 at 06:34	21 Nov 2018 at 06:36	Truck 413	178	0.02
28 Nov 2018 at 04:32	28 Nov 2018 at 05:38	Truck 413	7781	1.1
07 Dec 2018 at 05:26	07 Dec 2018 at 05:38	Truck 413	489	0.19
11 Dec 2018 at 17:03	11 Dec 2018 at 17:39	Truck 413	1551	0.59
30 Dec 2018 at 06:52	30 Dec 2018 at 07:38	Truck 413	5333	0.77
10 Jan 2019 at 05:18	10 Jan 2019 at 05:59	Truck 413	6636	0.68
19 Jan 2019 at 06:35	19 Jan 2019 at 06:53	Truck 413	1042	0.29
19 Jan 2019 at 06:02	19 Jan 2019 at 06:30	Truck 413	3547	0.46

USE YOUR DATA: GPS-enabled tracking data allows analysis of salt applications.

2 Figure stop and starts. Production efficiency and waste are two sides of the same coin to analyze. Analyzing production starts with tracking times for the primary operations such as anti-icing, plowing, deicing, ice watch, travel, loading and unloading and other job costs.

Once you can consistently and reliably track time and materials usage, you can then analyze by person, crew and event to determine where inconsistencies and waste exist.

3 Tracking service levels. Level of service (LOS) and quality of service are equally important to analyze. Client or end user feedback is the foundational measurement to analyze, including use of surveys, tracking



APPLICATION CHECK: Raw data derived from GPS technology provides the ability to analyze salt application data at a single vehicle/operator view. This also allows managers to see variability in application rates, durations of time and comparisons between other vehicles and operators.

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- **Optimize** equipment, materials, time and data

complaints and other feedback data. Triggers, thresholds and timing of service are minimum standards that should be assessed after each storm to confirm if basic expectations are being met consistently. Requests for services that are considered outside the agreed scope of work (SOW) should be tracked and analyzed to provide a benchmark for assessing if additional requests for services have reached a

Continuous Improvement

To get better, train, communicate, benchmark — and be willing to change.



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CHANGE

Develop a company culture that accepts change and continuous improvement is potentially the most challenging for any organization

Change is so important because as an industry, our clients are accustomed to a business-as-usual approach to managing snow and ice conditions. Innovation, optimization, and increasing efficiencies and profits are all enabled by change and a systemic cultural acceptance to change. It only takes one person in an organization to sabotage change for the sake of improving.

BENCHMARKING

Set and follow targets for production, material/inventory outputs (including salt use) and overall costs

These are things you can benchmark against your own company's performance and that of the industry's best practices standards.

COMMUNICATION

This is an area where we all can improve.

To do so, we need to determine what needs improved. Are we communicating to the proper decision makers or do we need to improve our levels of relationships? When and how often to communicate? Do our clients/constituents see us as approachable? Are we available to those with whom we should be communicating? What message needs communicating? How can we best deliver our message using tools, technology, cadence and reliability?

TRAINING

What does your training look like now?

Is it the typical half-day once or twice a year style that expects your employees to "drink from a fire hose" and then expect 100% retention of what's taught? Or is there a more regularly scheduled cadence of focused topics for learning? Is your training well thought out, developed and scheduled? Or is someone asked to put something together the night before?

LEVEL OF SERVICE

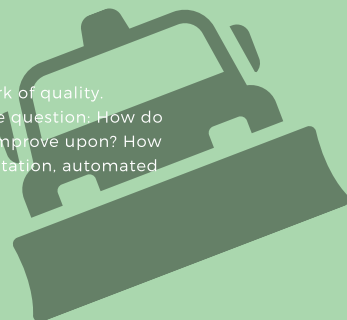
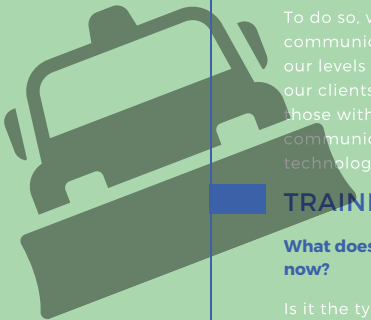
Not to be confused with scope of work, LOS is the level of expectation(s) a client or constituent expects when it snows.

It's what gets sold and is produced. It's the benchmark of quality. Because it's the core of any snow business, it begs the question: How do we improve it? What needs to be measured to then improve upon? How do we measure LOS? With cameras, written documentation, automated tracking or guessing?

SAFETY

Embed safety in every training or educational opportunity — across every level of your operation.

Safety tailgate talks on their own only scratch the surface. Whether it's plowing snow, shoveling walks, cleaning trucks, mowing grass or working at a computer, the safety components that make up each operation and function of every job is what needs to be taught.



Continuous improvement

To get better, train, communicate, benchmark — and be willing to change



BY PHILL SEXTON,
CSP, ASM

“Improve.” It’s central to the continuous improvement model. There are several areas of a snow and ice management operation where you can use the Sustainable Winter Management (SWiM) model to drive improvement. The primary SWiM guidelines to include as a standard set of policies for improving your snow and ice management operation include:

Change

Developing a company culture that accepts change and continuous improvement is potentially the most challenging for any organization. Change is so important because as an industry, our clients are accustomed to a business-as-usual approach to managing snow and ice conditions. Innovation, optimization, and increasing efficiencies and profits are all enabled by change and a systemic cultural acceptance to change. It only takes one person in an organization to sabotage change for the sake of improving.

How do we change? First, we need to ask the question: What would be worth changing for the positive?

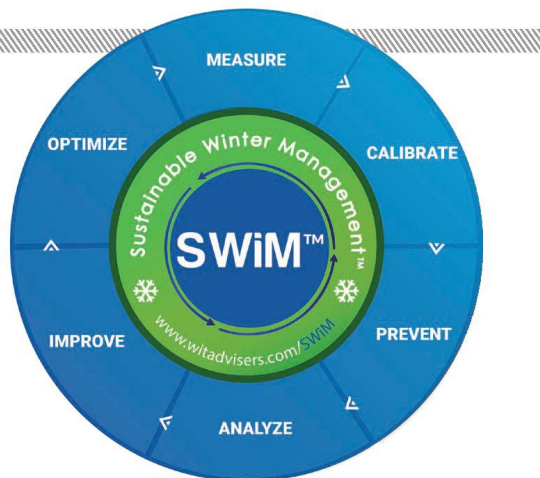


TRAINING: Consistent, scheduled training opportunities are critical to building a culture of continuous improvement.

Profits? Quality and the level of service (LOS) for your clients? Morale? Differentiating yourself from the competition? Work-life balance? The

amount of sleep you and your team are getting or lacking? If these questions resonate with you and your team, congratulations — you understand why change and continuous improvement is critically important to sustain any business or operation.

EDITOR’S NOTE: This article is the sixth in a series that discusses policy, methodologies and environmental stewardship through the lens of sustainability as it applies to winter management operations. Each issue will look at one of the categories of SWiM policy standards.



Benchmarking

Set and follow targets for production, material/inventory outputs (including salt use) and overall costs. These are things you can benchmark against your own company’s performance and that of the industry’s best practices standards.

Communication

This is an area where we all can improve. To do so, we need to determine what needs improved. Are we communicating to the proper decision makers or do we need to improve our levels of relationships? When and how often to communicate? Do our clients/constituents see us as approachable? Are we available to those with whom we should be communicating? What message needs communicating? How can we best deliver our message using tools, technology, cadence and reliability?

Training

What does your training look like now? Is it the typical half-day once or twice a year style that expects your employees to “drink from a fire hose” and then expect 100% retention of what’s taught? Or is there a more regularly scheduled cadence of focused topics for learning? Is your training well thought out, developed and scheduled? Or is someone asked to put something together the night before?

Level of service

Not to be confused with scope of work, LOS is the level of expectation(s) a client or constituent expects when it snows. It’s what gets sold and is produced. It’s the benchmark of quality.


Because it’s the core of any snow business, it begs the question: How do we improve it? What needs to be measured to then improve upon? How do we measure LOS? With cameras, written documentation, automated tracking or guessing?

Safety

Embed safety in every training or educational opportunity — across every level of your operation. Safety tailgate talks on their own only scratch the surface. Whether it’s plowing snow, shoveling walks, cleaning trucks, mowing grass or working at a computer, the safety components that make up each operation and function of every job is what needs to be taught. Not necessarily the safety aspect

individually. It needs to relate to every job role within the organization.

Increasing your ability to control costs, manage risk and enable continuous improvement is possible when you practice the “Improve” policy and other SWiM guidelines. These guidelines are designed to help snow and ice management operations

start with a simple set of criteria. It’s up to you how you want to improve with them. 

Phill Sexton, CSP, ASM, has been working in the winter management profession for over 30 years. He is managing director for WIT Advisers (WIT), which serves as an industry adviser to SIMA. Email psexton@witadvisers.com or visit www.witadvisers.com/swim.



STATE *of* READINESS

Is your snow contract predictable and repeatable? Or is it costing you?

PHILL SEXTON, CSP, ASM

What do snow companies, day traders, insurance companies and fire departments all have in common? They all deal with extreme variables and conditions. The difference comes in the way each is funded and deals with anticipated extremes. Winter 2019-20 is an interesting case study of another extreme season. For many markets throughout North America, the number of storm events and snow accumulation was at an extreme low. Yet places like Boulder, CO, experienced their heaviest snow season on record after three consecutive light seasons.

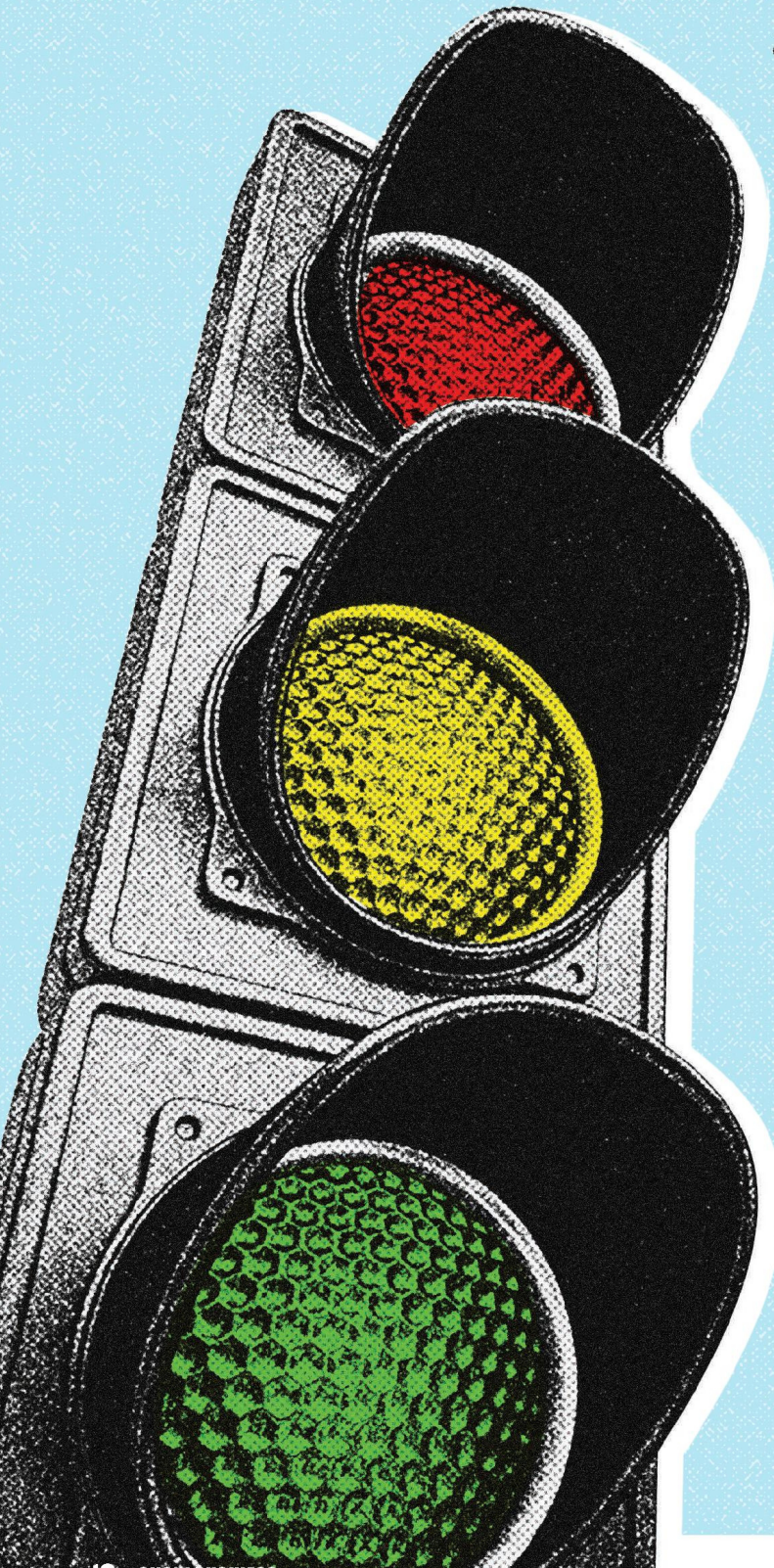
How can property owners and snow contractors work together to handle these extreme fluctuations? Implementing a predictable, repeatable and equitable contract model as a differentiator is a good start.

Differentiate for an advantage

Differentiation is the strategy. Creating a professional advantage is the opportunity. For decades, most of the snow and ice management industry has accepted being paid for the number of plowing occurrences and amounts of salt applied. This strategy works best only when the season is “average.” The problem with this philosophy is that the statistical probability of experiencing an average season is low.

With most contract models, there is almost always a perceived winner and loser. Therefore, contractors and their clients are positioned at opposite ends of the success spectrum.

Snow and ice management professionals should be compensated for levels of preparedness, training, inventory investment and fixed overhead expenses. For decades I’ve estimated the true value of professional snow and ice management services. In my estimation, about 25% of the total value is the actual plowing and ice management. The other 75% is the cost and value of being prepared and ready to respond. How to differentiate when performing this valuable service is about differing from your competitors in a manner that lets you serve your customers better, and more profitably, without it costing your clients more. So how do you do that? Let’s put snow and ice management into perspective with other industries.



AVERAGE SEASON EVENT DISTRIBUTION

Rochester, NY 10 Climate Zone	Dustings	0.1-0.9	1.0-1.9	2.0-3.9	4.0-5.9	6+	Non-Trace	Total Events
	8	16	9	7	2	3	37	45

SNOWFALL % BY QUARTER

	Q3	Q4	Q1	Q2	Annual
Snowfall inches	0	19.2	59	1	79.2
% of season	0	9	24.2	74.5	1.3

SEASON % OF 5-YEAR AVERAGE

	Snowfall	Total Events	Trace Events	>0.1 events	% of 5-year average
5-year ave.	79.2	45	8	37	
2015-16	50.3	21	1	20	63.5%
2014-15	101.4	57	14	43	128%
2013-14	115.1	65	16	49	146.6%
2012-13	71.5	49	7	42	90.3%
2011-12	56.7	35	4	31	71.6%

Who are you?

Day trader. If you are a contractor who sells most of your contracts as time and material (T&M), per-inch or per-push, you might be a day trader (or gambler). If you're a facility/property manager or owner who purchases snow and ice management services under those contract models, you might also be a day trader. Hedging your success on the amount of weather is comparable to (if not worse than) guessing what will happen in the stock market each day.

Insurance company. When you purchase collision insurance for your company vehicles, are you allowed to pay only if there is an accident? When you purchase fire insurance, do you only pay the premium when there is a fire? Of course not. Yet 75% of snow contracts are set up this way via T&M, per-plow or per-inch contracts. Why are clients willing to risk service failure that naturally happens in at least 20% of contracts that are paid this way? They can't realistically expect contractors to be ready if they aren't being paid to be ready ... can they?

Firefighter. The success of a fire department is measured by its level of preparedness, not by the number of fires. Can you imagine if the number of fires determined how and how much a fire department was to be funded? It would be a disaster for the community that had very few fires one year and a fire that consumed an entire city block the next year.

That fire department would quickly earn the reputation of being "cellar savers" versus the heroes they are. As a snow fighter, have you ever felt the same way after a

AVERAGE? NOT SO MUCH This grouping of data verifies that median (average) weather does not happen most of the time. In fact, "normal" / average happens about 1 out of every 5 years.

massive storm for which you were ill-equipped? How about the "snowmageddon" storm you would have serviced well had the customer paid you appropriately for the right type and quantity of equipment to handle it? As an industry, we are always expected to be ready for the "big one." Yet we don't seem to expect to be paid for it. Why? Because a light year, like the one most of us experienced this past season, takes us back to the dark days of not being recognized as an essential service – until the next big one hits.

"Normalized" weather

The reality is that snow and ice management is a business of weather. How do you base a contract on something that is unpredictable, while still being fair and equitable to all stakeholders? How do you "normalize" a weather-based service contract? The answer requires all stakeholders to understand how weather behaves and for contractors to use unbiased, third-party weather data to standardize production estimates and pricing.

Median (average) weather does not happen most of the time. My personal experience of plowing snow and analyzing this type of data for over 30 years has proven to me that "average" happens about 1 out of every 5 years. It's the high and low seasons that cause the average; therefore, we must think about "normal" as something beyond "average."

Minimum state of readiness

A minimum state of readiness or preparedness is required to meet a desired level of service. This state of readiness comes with a fixed cost, whether it snows or not.

What does "ready" mean? Let's think again like a fire department. What do you intuitively expect from your local fire department for them to be considered ready? Do you see qualified people conducting Monday night drills? Do you see state-of-the-art fire trucks being maintained and prepped each week – whether there is a fire or not? Do you see volunteers advocating and raising money for their local volunteer fire department year-round?

It is critically important that as an industry we align with

FLAGSTAFF, AZ		CHICAGO, IL		MISSOULA, MT		DENVER, CO	
19-20 Season	70.3	19-20 Season	34.8	19-20 Season	36.5	19-20 Season	71.4
Current 30 Avg.	88.5	Current 30 Avg.	37.4	Current 30 Avg.	42.7	Current 30 Avg.	49.1
Highest Season	158.9	Highest Season	82.0	Highest Season	111.6	Highest Season	79.0
90th Percentile	137.1	90th Percentile	54.5	90th Percentile	65.8	90th Percentile	72.6
Median	87.2	Median	33.1	Median	41.1	Median	49.2
10th Percentile	43.9	10th Percentile	23.9	10th Percentile	22.7	10th Percentile	29.8
Lowest Season	28.5	Lowest Season	10.4	Lowest Season	17.6	Lowest Season	21.8

LAST 30 YEARS (1991-2020) The wild swings in the sampling above show the importance of understanding climatology data to more accurately understand “average” and “normal” and how they can impact your pricing for snow services. *Courtesy of WeatherWorks, Inc.*

Continued from page 13

the true value and service we provide. The value is everything behind the scenes that goes into being ready to clear snow and ice from roads, parking lots and sidewalks.

The framework for a snow and ice management operation to structure a minimum state of readiness can be broken down into the following four seasonal categories. How will you cover these costs if it barely snows and you are paid by the plow, T&M or per-inch?

Preseason

- Calculate and procure minimum revenue needed to support fixed overhead costs to be ready
- Procure resources (people, equipment, materials) to support a minimum state of readiness

- Train your team on readiness expectations for each client/property you service

Pre-storm

- Confirm the required resources to service an upcoming forecasted storm are ready for dispatch
- Calculate additional capacity required to be ready in case of breakdowns
- Mobilize and dispatch the proper capacity of resources for each weather forecast; keep in mind that you always need to account for a percentage of “false alarm” and long-duration sleet/freezing rain forecasts

Post-storm

- Document service and invoice
- Debrief and train all team members
- Inspect, repair and refuel equipment

Postseason

- Demobilize
- Analyze performance data and training
- Repair and store equipment

What does readiness cost? By now, I’m hopeful my point that only about 25% of the cost and value for servicing a client and their respective property relates to the actual plowing and ice management is starting to make sense.

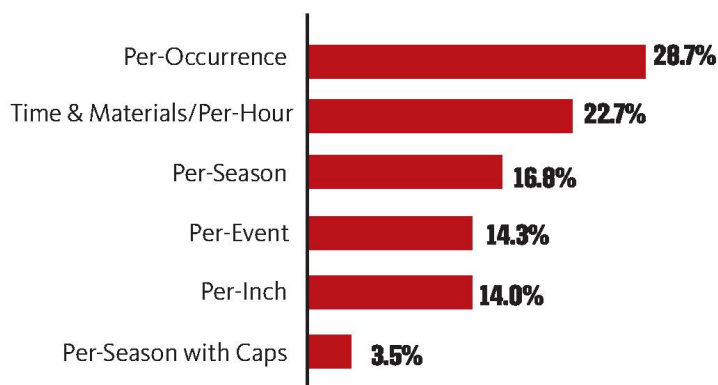
There are real and significant costs before and after the actual performance that are nearly impossible to capture in a typical T&M or per-inch/per-occurrence contract – unless we charge enough to cover all of those costs even in a low season. However, raising your rates to protect yourself in low seasons does not bode well for clients, particularly in average or heavy snow seasons; in the long term, this will cause budget issues for property managers and will erode trust in the relationship.

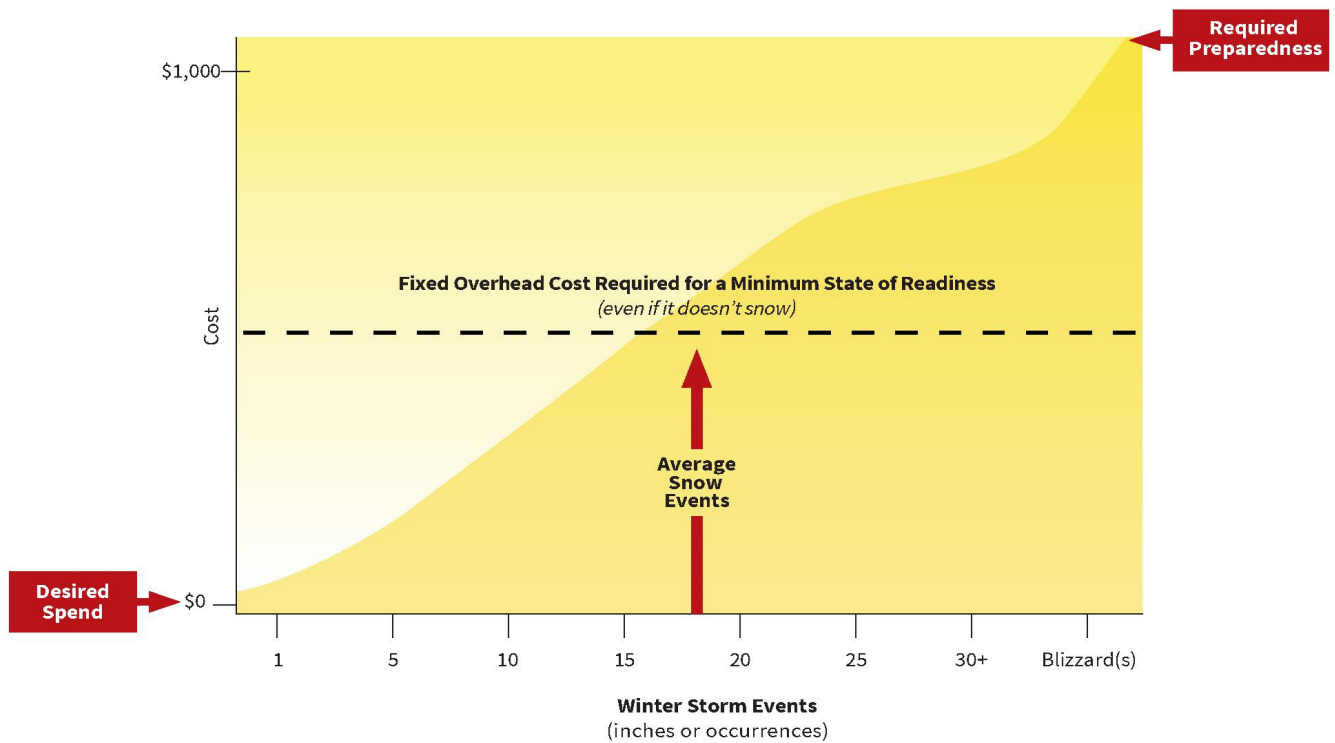
Contract models

There are necessary costs to budget for in order to provide a minimum state of readiness, even if it doesn’t snow. But how can you capture these costs for readiness and overhead? The solution is in the contract.

According to a combined five years of survey data from SIMA, nearly 75% of all snow and ice management

QUANTITY OVER QUALITY? According to 5 years of survey data from SIMA, nearly 75% of all contracts are driven by the amount of weather and materials utilized.





SNOW & ICE MANAGEMENT COST (\$) AND CAPACITY CURVE There is such a thing as an “average cost” or budget for providing a minimum state of readiness, especially if it doesn’t snow. Your contract pricing should include the costs for being reimbursed for your readiness and to cover your overhead costs.



Continued from page 14

contracts throughout North America are driven by the amount of weather and quantity of time and materials utilized. That means only 25% of contracts are paid for based on levels of preparedness, service performance and efficiency.

Fortunately, there are contract models that are equitable for both contractors and their clients. These models incentivize efficiency and enable predictable and repeatable revenue for contractors and costs for clients, allowing each to more accurately budget.

Performance- and preparedness-based contract models are being utilized in every market in North America. The myth that “my market” won’t accept a new contract type is categorically false based on my experience of working with clients throughout the United States and Canada.

It requires the ability and willingness for you and your client to change and accept win-win standards for contract agreements that equally protect clients and the snow and ice management provider. The biggest companies that are either publicly traded or owned by private equity firms will tell you the same thing. Predictable and repeatable costs and revenue is the name of the game. **SB**

QUALITY OVER QUANTITY

Contracts that incentivize performance and readiness better protect clients and contractors

Performance-based contracts

Incentivize for meeting or exceeding a level of service expectation and efficiency

Fixed seasonal contract (a.k.a., lump sum, seasonal): Normally priced within a range of average to slightly above average winters. Requires a multi-year/season agreement of at least three years and preferably five years to pay off for both the contractor and client.

Seasonal variance contract (a.k.a., floor/ceiling): A base cost is established within the seasonal average range with a floor to provide clients with a negotiated credit for extreme light winter seasons and to provide contractors with additional cost recovery for extreme heavy seasons. Within this contract model a cap can be set for both the floor and ceiling.

Phill Sexton, CSP, ASM, has been practicing in the winter management profession for over 30 years. He is managing director for WIT Advisers (WIT), which serves as industry adviser to SIMA. WIT administers the Sustainable Winter Management (SWiM) program and certifications. Contact him at psexton@witadvisers.com or visit www.witadvisers.com/swim.

Preparedness contracts

Incentivize for meeting a minimum state of readiness and level sets fees or rates

Fee-based contract: A preseason fee or an equal monthly installment is paid to the contractor for the fixed overhead expenses required for being prepared, no matter how much or little it snows. In exchange, a lesser hourly (i.e., T&M) or per-occurrence (i.e., per-push) rate is negotiated.

Retainer-based contract: Like other professional agreements, a minimum cost for preparedness is established between the contractor and their client – similar to a fee-based contract. This acts as the minimum retainer to be paid preseason and deducted from the cost of service throughout the season. Once the retainer amount has been reached, lower negotiated hourly or occurrence-based rates protect clients from high-season cost fluctuations more effectively than traditional T&M or quantity-based contracts. This model also protects contractors from losing money during extreme low seasons.

MORE ON WEATHER

Is weather history repeating itself? Page 18.

Mixed precipitation events require new pricing approach. Page 40.





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