Tips for Safe and Effective Use of Dock De-Icers

Some of the following tips will vary in effectiveness depending on external factors such as water depth, dock shape, and water obstructions.

- Complete Town application and post a sign (required by State Law RSA 270:33) that is visible to winter recreationists warning them of open water and thin ice conditions when a de-icer is in use. Contact your Town or the NH Department of Safety for more information about sign posting requirements.
- When purchasing or replacing a de-icer, choose the smallest size possible to maintain an ice free zone around your dock.
- If using a circulator type of de-icer, be sure to point it in a vertical direction not at an angle toward the middle of the lake as dangerous thin ice conditions will likely occur that are hard to see.
- Use a thermostat to run the de-icer device only when air temperature drops below the freezing point reducing your energy costs.
- Run your de-icer device about four hours a day (a timer automates this operation). This time period, according to the Lake George Association, is usually adequate in maintaining open water and/or thin ice around a dock.
- Set up your de-icer to form a narrow open water area at the end of your dock (a bubbler device works best with this technique) creating space for ice to expand preventing damage (a timer and thermostat automates this operation). This technique usually requires a smaller sized de-icer than would be needed to de-ice your entire dock area reducing your costs and creates a smaller open water area that is safer for winter recreationists.
- During spring ice melt, allow a thin layer of ice (½ inch thick or less) to form around your dock to help prevent ice sheets from shifting or drifting into your dock. A thin ice layer can be maintained by operating your device only a few hours a day depending on air temperature (a timer and thermostat automates this operation).
- Run your de-icer during spring melt only (early March) as this is when the ice will most likely damage your dock (bubbler de-icers may not be as effective with this technique).
- Install the de-icer before the ice starts to freeze in the late fall or through a cut hole in the ice in the spring (circulator type). Allow the ice to freeze around your dock during the winter months and turn on the unit in the spring before the ice starts to melt and break apart. Once a hole has been formed, allow the ice to refreeze into a thin layer as discussed above. This practice significantly reduces your energy costs and provides a safer environment for winter recreationists.

Alternate Strategy

When the time comes to replace your dock consider installing one that can be removed from the water such as a cantilever type eliminating the need for a de-icer device. Please refer to LSPA’s Lake Friendly Dock Choices pamphlet for more information on dock types. This pamphlet is also available on LSPA’s website.

Resource List

LGA. Don’t Be Eaten Alive: Tips for Effective and Safe Use of Ice Eaters. Lake George Association. www.lakegeorgeassociation.org


De-Icer Manufacturers/Suppliers

De-icers can be purchased locally from Clarke’s Hardware and Watermark or from one of the many online suppliers. These websites offer a lot of helpful information. This is not an all inclusive list.

- Arbrux – www.arbrux.com
- Canadian Pond – www.canadianpond.ca
- Ice Eater – www.thepowerhouseinc.com
- Kasco – www.kascomarine.com
- Taylor Made Products - www.taylormade.com
Dock De-Icers

In an effort to protect permanent docks from ice damage, many property owners use a mechanical device that keeps ice from freezing around the piers of a dock or the underlying crib structure. These devices provide an ice free zone by constantly moving water in much the same way as a flowing stream does. If not properly managed or installed these devices can create larger than necessary open water areas and thin ice that are unsafe for recreationists during the winter months. These large open water areas can also lead to greater ice damage to a dock during the spring melt. The purpose of this pamphlet is to provide property owners information on how to safely and effectively install and maintain a dock de-icer.

Types

There are two common types of de-icer devices each with their advantages and disadvantages. One type may be better for your dock than the other depending on factors such as water depth, water obstructions, dock shape, and geographic location.

Bubbler: This device works by releasing small air bubbles from a perforated hose(s) or air diffusion tubing placed at or near the lake bottom. Some tubing has flexible ballasts attached making it easier to install as the tube doesn’t need to be tied down to weights or the dock structure. The hose is attached to an air compressor typically located on your dock inside a specially made enclosure or inside a boathouse or other structure. Bubbler de-icers are usually more expensive than a circulator type but use less electricity to operate, don’t stir up lake bottom sediment and are less likely to cause dangerous thin ice conditions. They can also be noisier than a circulator de-icer depending on where the compressor motor is located.

Circulator: This device works by circulating the slightly warmer water near the lake bottom toward the surface and functions best in water depths of at least 2.5 feet. The entire device is submerged in the water and is usually easier to install than a bubbler type. Circulator de-icers typically open up larger areas of water as it can’t be placed or adjusted as easily like the tubes of a bubbler device can. Most of these devices also contain a fair amount of lubricating oil that can leak directly into the water from failed seals.

Negative Impacts of a De-Icer Device

Listed below are some potential negative impacts associated with the use of de-icing devices. Many of these impacts can be prevented or minimized by following the tips for safe and effective use included in this pamphlet.

- Many de-icing devices simply open too large an area. This increases the amount of thin-ice or unsafe conditions for ice-skaters, cross-country skiers, snowmobilers, ice-sailers, etc. Under certain conditions, these thin-ice areas are difficult to see.
- There is a noise factor involved with de-icing devices. Many de-icers are used by dock owners who do not live year-round at the lake, and have not heard the late night sounds/constant hum of 1, 2, 3, or more nearby de-icers.
- Lake water temperature and light conditions are altered which may have an impact on algae and plant growth, and alter feeding habits of fish and other aquatic organisms.
- In some instances, de-icing devices (circulator type) disturb bottom sediments and cause higher levels of turbidity and may even undermine the structure of your dock.
- These impacts are compounded because of the many de-icing devices in use around the lake.
- De-icer devices are considerably expensive to buy and operate.

Size & Cost of Use Comparison

This cost comparison assumes a device will be run 24 hours a day, seven days a week, four months of the year. Many of the units for sale include a thermostat and/or a timer as an option. If a thermostat and/or timer are used, operating costs will be reduced. A device run only 4 hours a day will significantly reduce operating costs by as much as 85%.

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost of Unit</th>
<th>Motor Power Rating</th>
<th>Approximate Size of Ice Free Zone</th>
<th>Seasonal Operating Costs</th>
<th>5-year Operating Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circulator</td>
<td>$450 - 500</td>
<td>2.5 Amps (¼ HP)</td>
<td>25 foot circular hole</td>
<td>$171</td>
<td>$855</td>
</tr>
<tr>
<td></td>
<td>$500 - 600</td>
<td>5 Amps (½ HP)</td>
<td>50 foot circular hole</td>
<td>$342</td>
<td>$1,711</td>
</tr>
<tr>
<td></td>
<td>$525 - 700</td>
<td>7 Amps (¾ HP)</td>
<td>70 foot circular hole</td>
<td>$479</td>
<td>$2,395</td>
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<tr>
<td></td>
<td>$550 - 750</td>
<td>11 Amps (1 HP)</td>
<td>80 foot circular hole</td>
<td>$753</td>
<td>$3,764</td>
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<tr>
<td>Bubbler</td>
<td>$650 - 750</td>
<td>&gt;1 Amp (40 watts)</td>
<td>50-60 feet of tubing</td>
<td>$23</td>
<td>$115</td>
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<tr>
<td></td>
<td>$800 - 1000</td>
<td>&gt;1 Amp (65 watts)</td>
<td>70-100 feet of tubing</td>
<td>$37</td>
<td>$185</td>
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<tr>
<td></td>
<td>$1000-1400</td>
<td>&gt;1 Amp (90 watts)</td>
<td>110-150 feet of tubing</td>
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<td>$257</td>
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<tr>
<td></td>
<td>$1500-1900</td>
<td>1 Amp (120 watts)</td>
<td>160-190 feet of tubing</td>
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<td>$342</td>
</tr>
<tr>
<td></td>
<td>$2000-2500</td>
<td>1.7 Amps (200 watts)</td>
<td>200-250 feet of tubing</td>
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<td>$571</td>
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<td></td>
<td>$2600-3000</td>
<td>2 Amps (240 watts)</td>
<td>260-300 feet of tubing</td>
<td>$137</td>
<td>$684</td>
</tr>
</tbody>
</table>

1 Average cost of similar units.
2 Based on a 120 voltage rating – comparable 240 Volt motors use about the same amount of electricity.
3 These estimates can vary depending on water depth, air temperature, and configuration of unit/tubing.
4 Based on 4 months of use and the NH Office of Energy and Planning 2015 average $0.198 kWh rate.
5 Cost not adjusted for price inflation or rate changes.
6 Bubbler systems include air compressor and tubing. Tubing can be placed in any number of configurations such as in a perimeter around your dock.