



Solar-activated ice melting sand

Heat-absorbing coatings based on nanotechnology
research & development

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The Problem

Most Ice-melters are:

- **Toxic** to groundwater, plants, pets or property (concrete, asphalt, vehicles)
- **Expensive** (constant re-application, short shelf life)
- **Time-limited** to ~1hr

MAIN limitation to market growth: Use restriction due to harmful effects



Plant
Damage



Property
Damage





Our Solution

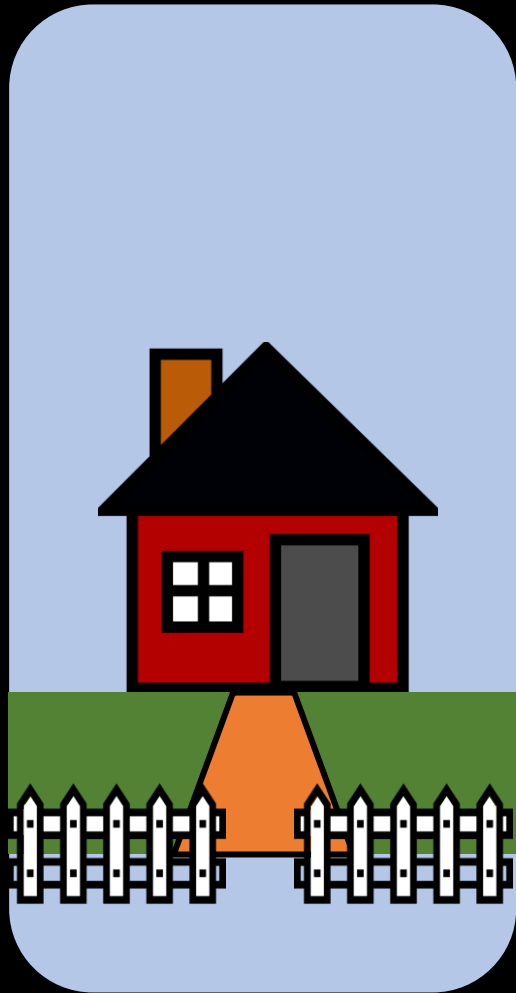
- **Sand coated** with solar-activated thermal coating
- **Non-toxic** to environment & concrete
- **Inexpensive**
- **Outperforms any salt** after 3hrs
 - (0°C, full sun, same weight)
- Lasts for **multiple days**
- **Versatile Coating:**
 - Works with sand, salt, or any other granular medium

SOLARMELTS





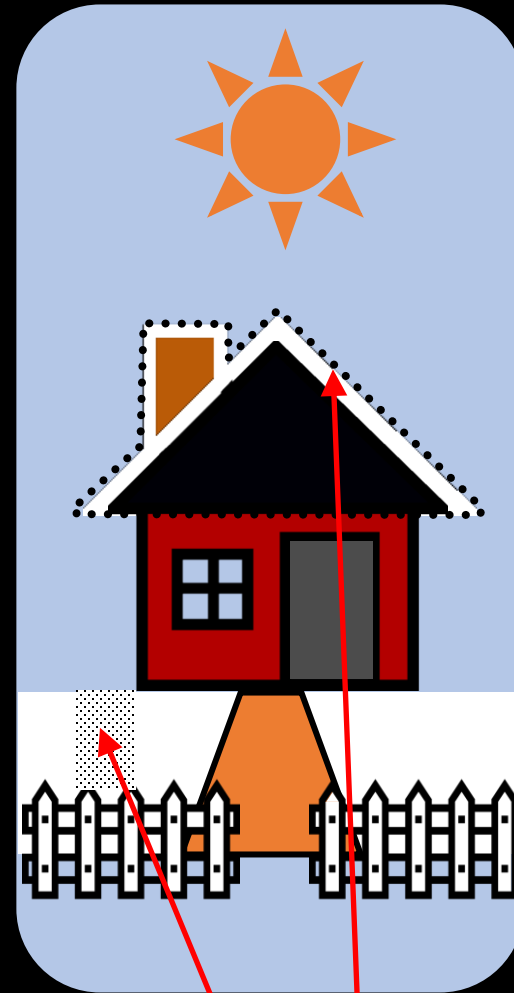
Solar Activated Snow Melting Pellets



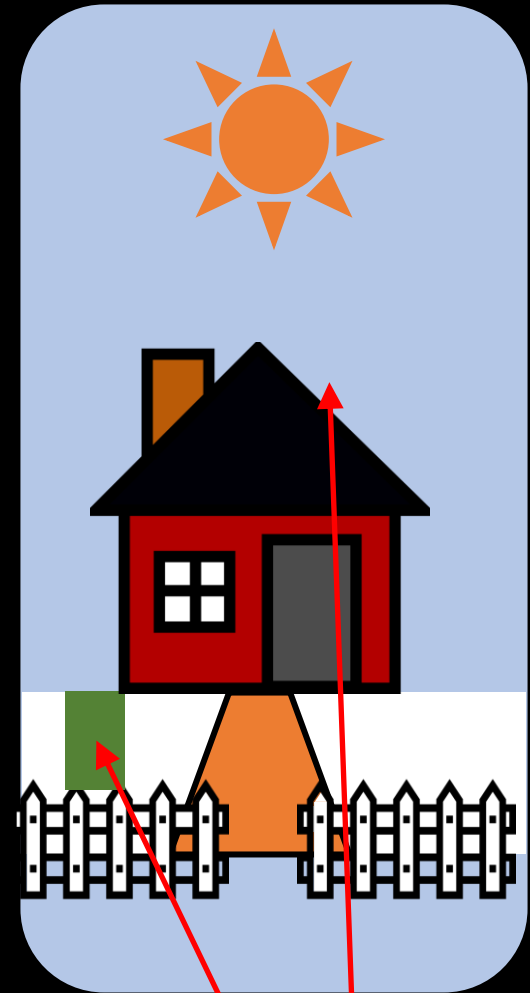
No Snow



Snow Falls



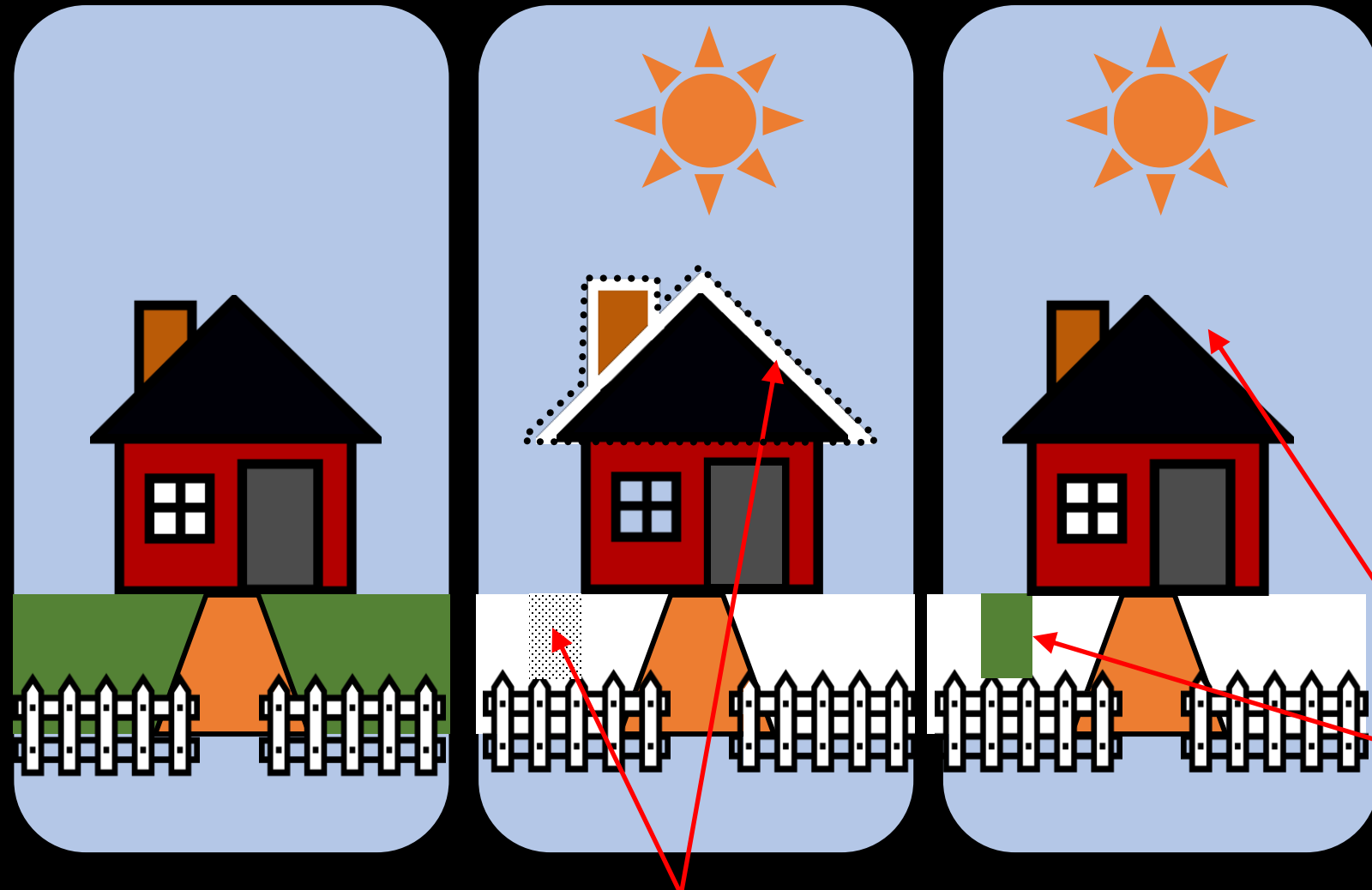
Apply SolarMelts



Melted snow!



Solar Activated Snow Melting Pellets



- **Melts snow/ice** without chemical reactions
- **Melting Rates**
 - **~7%/hr (in full sun)**
- **Bio-degradable**
- **Easy to use:** Disperse SolarMelts onto snow/ice and walk away!

Melted snow!

Apply SolarMelts after snowfall

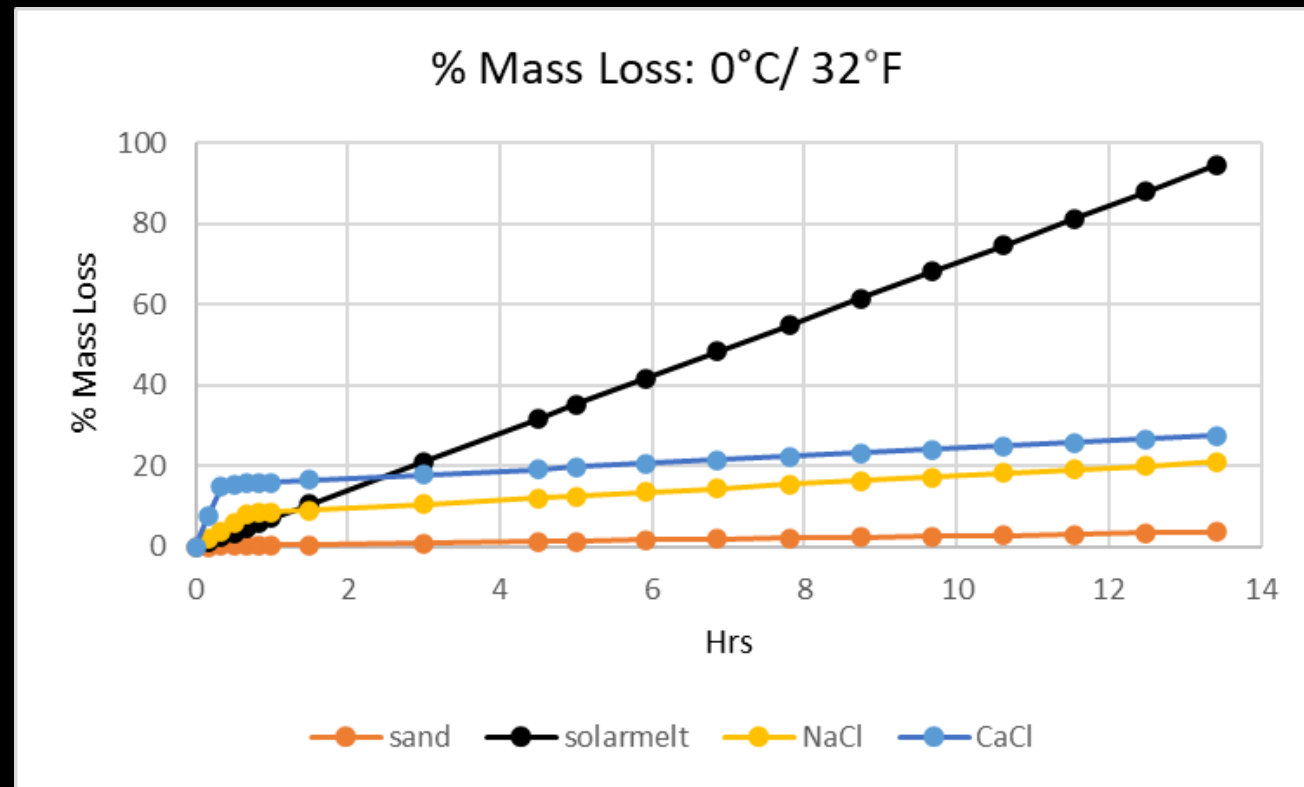


How it works

SOLARMELTS

- **Sand coated** with solar-activated thermal glue
- Spread on top of ice/snow in areas **exposed to sunlight**
- **Coating absorbs sunlight & heat** and will melt the local ice/snow region over several hours/days
- **Re-application** only needed for new snowfall

Melting Rate Comparison

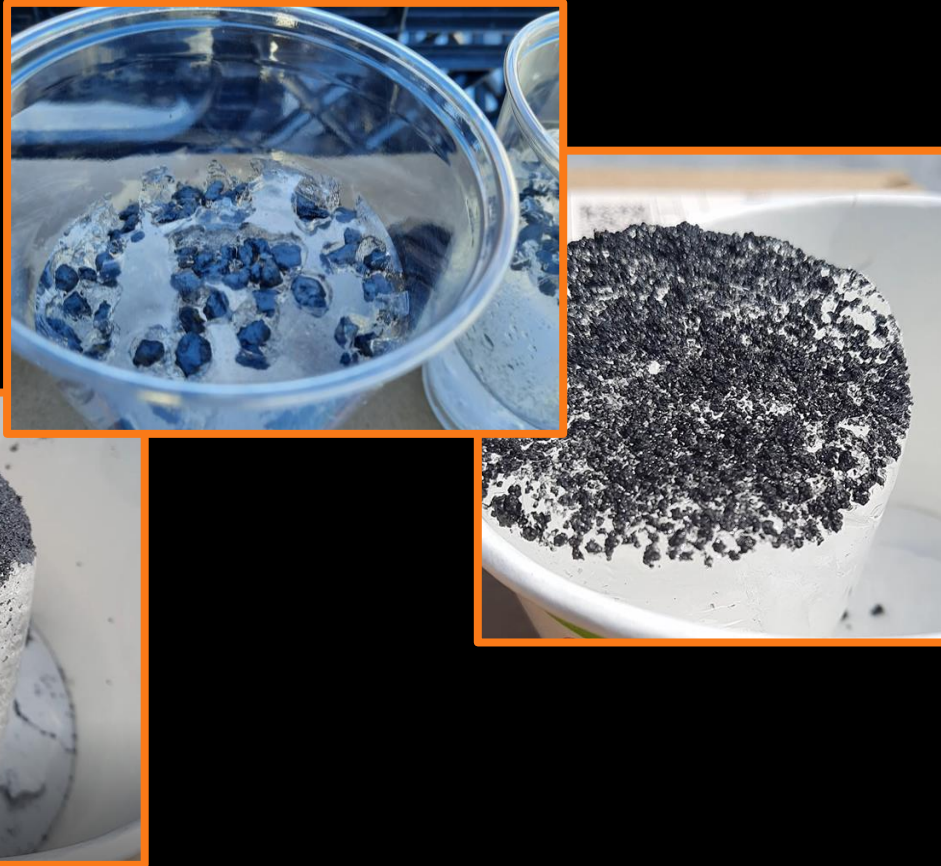


★★★★ Outperforms any salt after 3hrs ★★★★★

Game-Changing Advantages

SOLARMELTS

- Completely bio-degradable
- Can coat **ANY** granular medium
 - Can be used for other heat-coating applications -> see **Other Appl.**
- Can be mixed with salts to combine fast & slow heating processes
- Prevents slip & fall accidents (improved traction)
- Washes off after 5 rainfalls but not snowfalls



Product Comparison

Product Name	Safe Env/Pets	In-expensive	Long-term Use (24 hrs+)
Gobbler	×	×	×
Snow Joe	×	×	×
Blue Heart	×	×	×
Pellets of Fire	×	×	Up to 24Hrs
SOLAR MELTS	✓	✓	✓



Dry Markets



Total U.S. Sand Market

1.7M
tons



Local

\$3M



Sand
Heavy
States

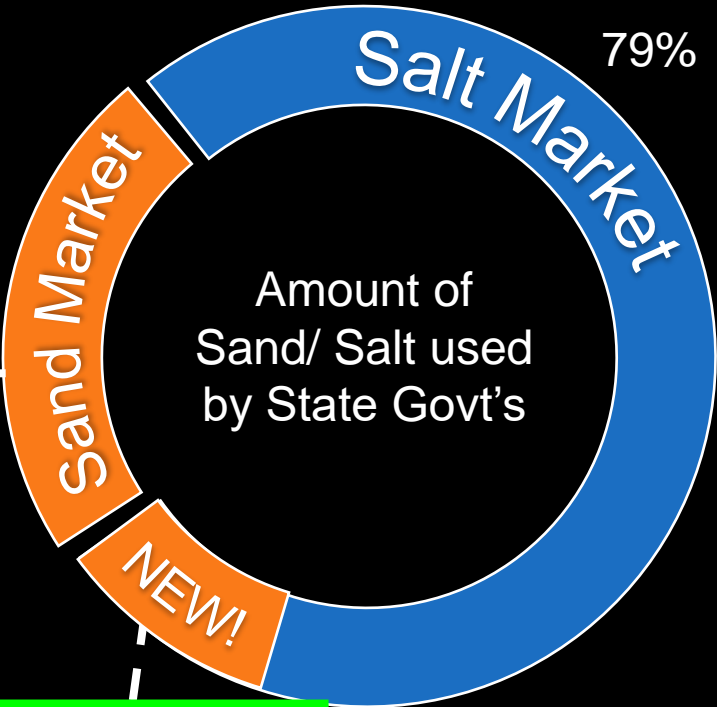
\$7.5M



Other
States

\$2.8M

21%

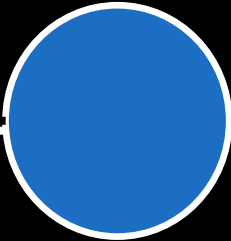


New
Buys

10% of Salt
market
\$21M

Total U.S. Salt Market

6.2M
tons

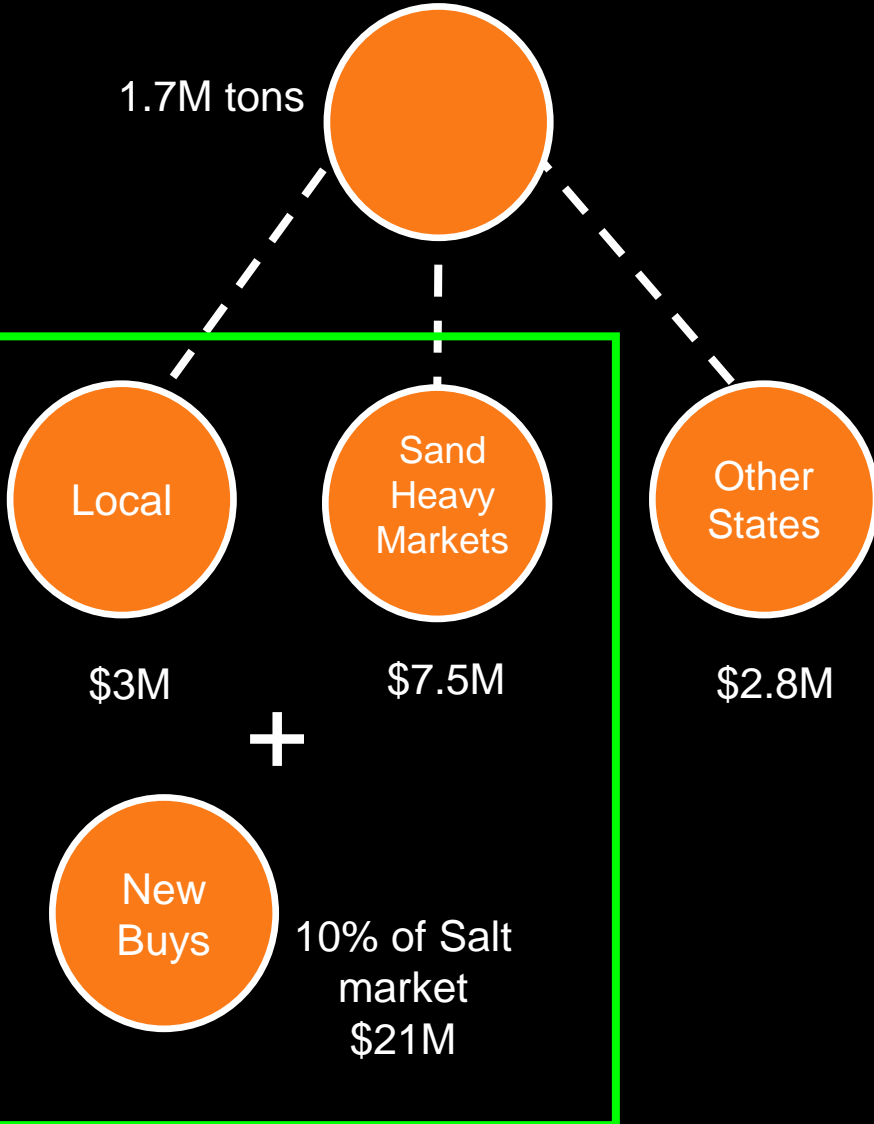


Local: NY, NJ, PA, MA, OH,
Sand Heavy States: OR, WA, WY,
MO, MT, MI

Sand Market Share Goals

Total U.S. Sand Market

1.7M tons



TAM (Sand Only)
Total Addressable
Market

\$13.M

SAM
Serviceable
Addressable Market

\$10.5M

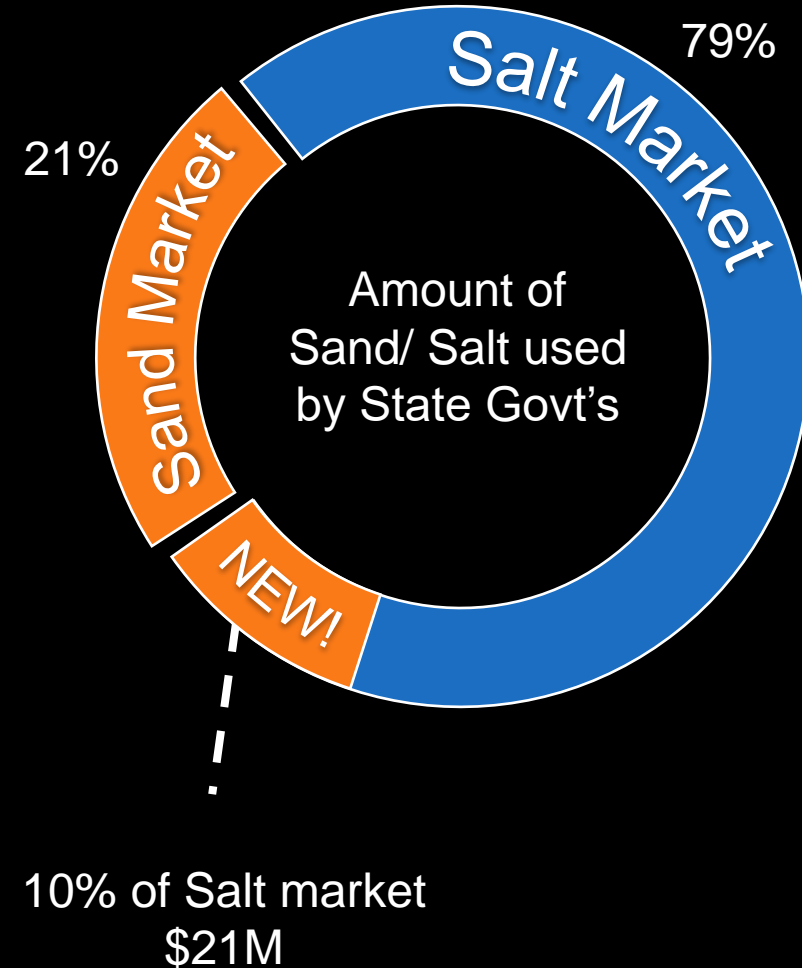
SOM
Serviceable Obtainable
Market

\$6.9M

20% of SAM + New
Buys from Salt Market

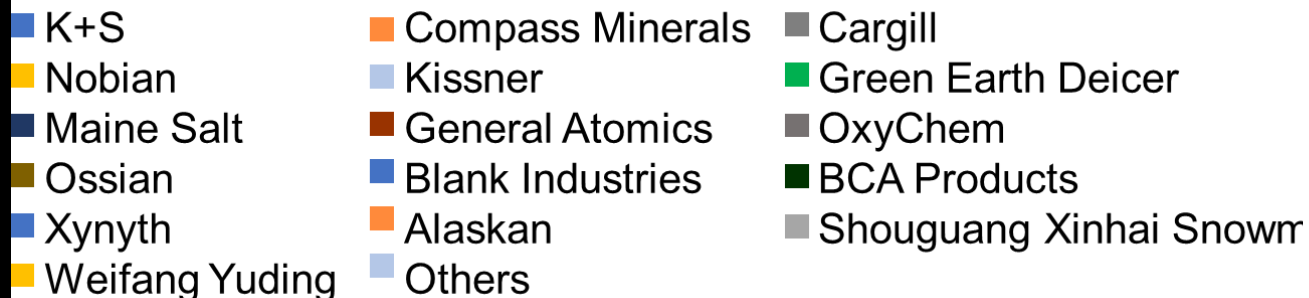
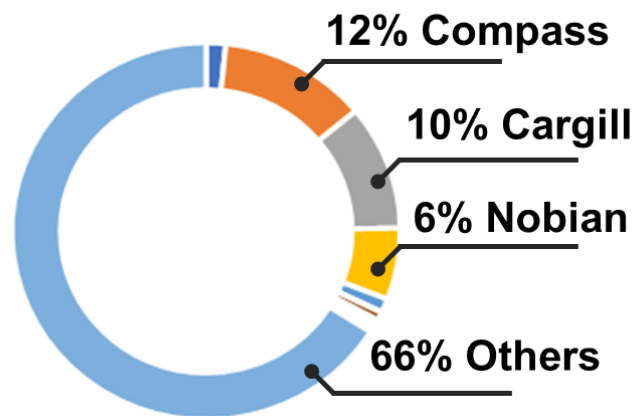
Invading into the Salt Market

- SolarMelts will reduce the need for constant re-application of salt in super cold areas
- We should capture more of the salt market as states learn how to use our product
- For Example: Salt a road once (to lower the freezing point) then apply SolarMelts after any subsequent snowfall

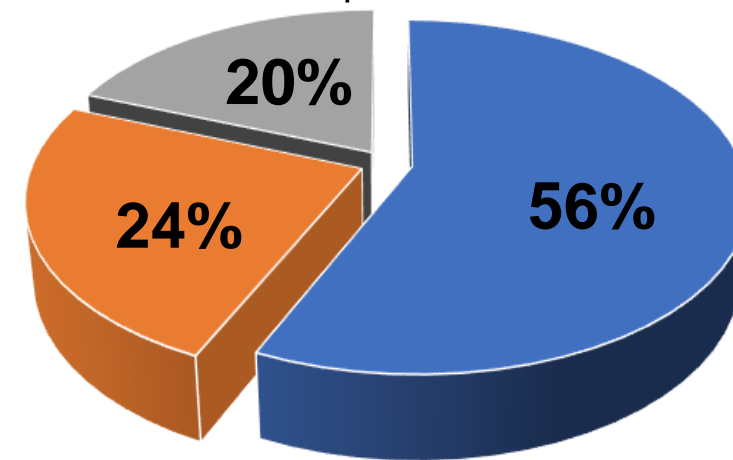


North American Market Statistics

Ice Melter Share (%) by Company

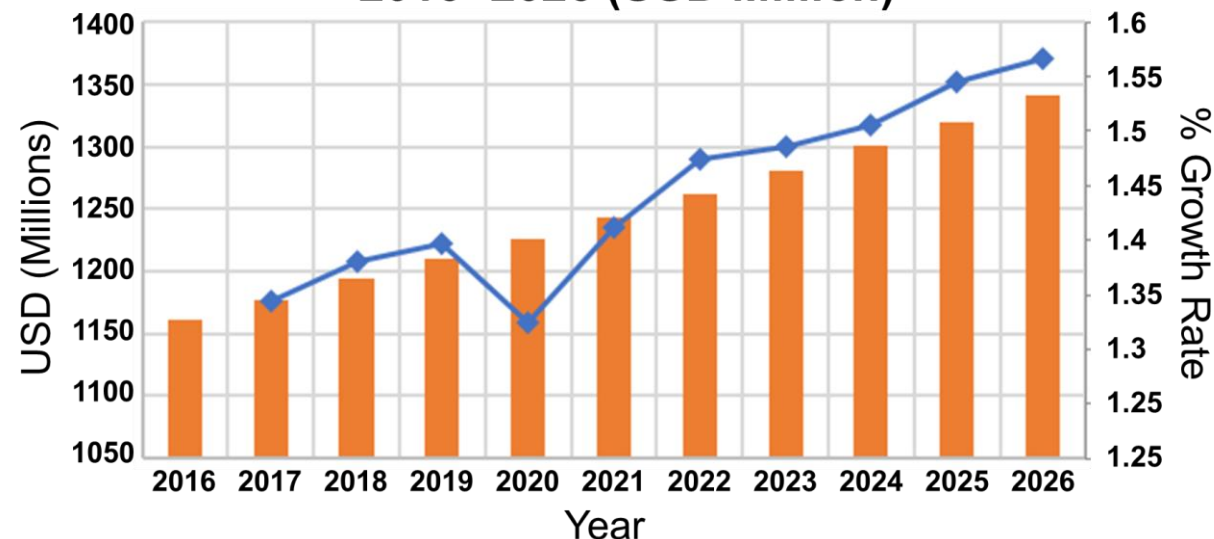


N. American Ice Melter Market 2021 - \$1.2 Billion



Government Residential Commercial

N. American Ice Melter Market by Application 2016- 2026 (USD Million)



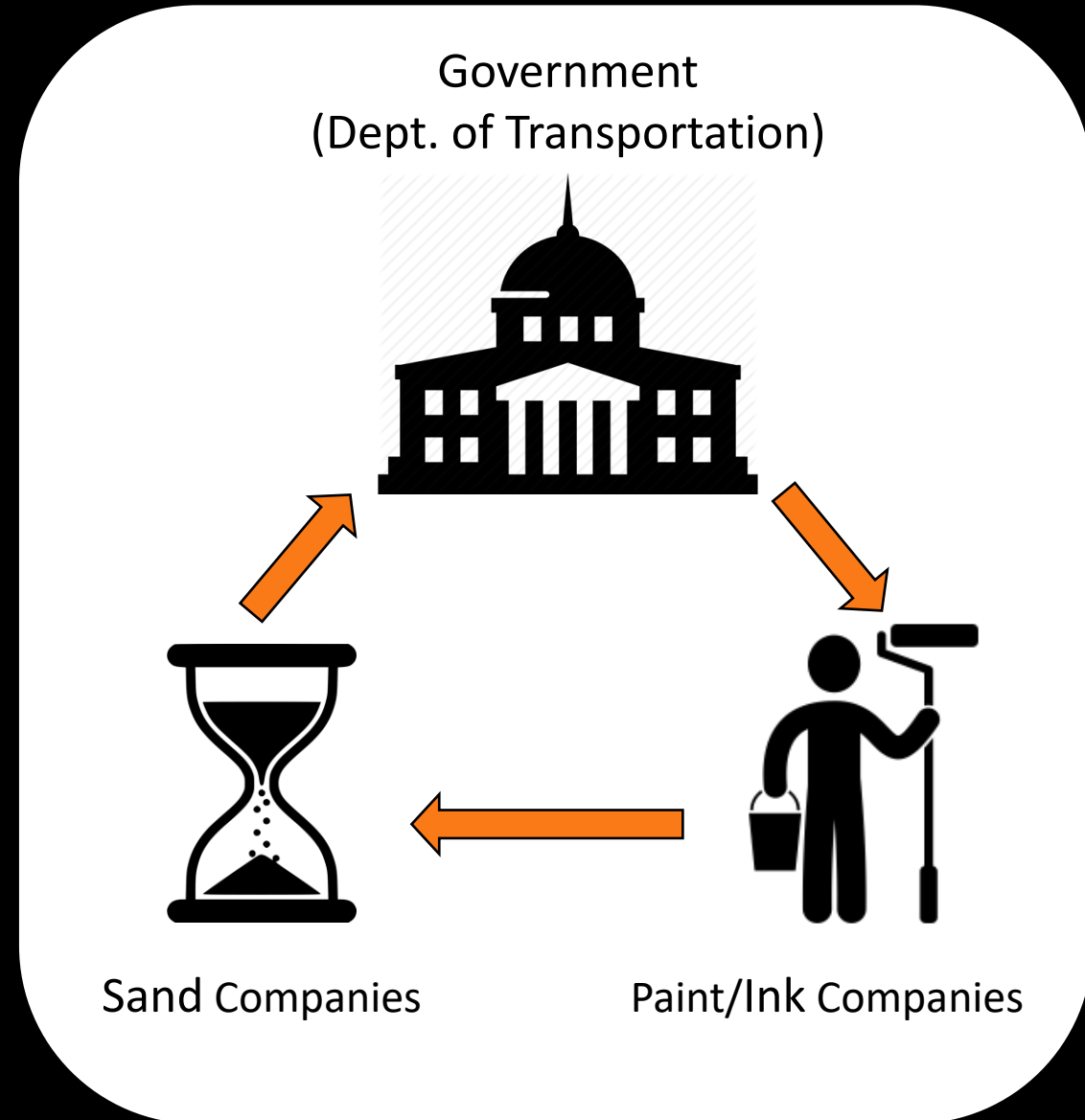


Market Limitations

- **Flat Growth.** Both Ice-melters (last slide) and sand markets for ice treatment have roughly **flat growth** due to harmful side effects
- **Toxicity.** Ice-melter growth restricted by damage caused to vegetation, concrete & asphalt, and pets
- **Re-application.** Sand is limited by the need of constant re-application since it is used for traction only and not ice melting
- **All** of these limitations are solved by using **SOLARMELTS** solutions

Plan to Market

- **Customer discovery** for the sand market with state & city-wide transportation departments in the NY, MA, PA, OH states
- **Seek non-binding contracts** with several local transportation departments
- **Leverage our contracts/connections with existing sand customers** to obtain a manufacturing buy-out/royalty agreement with either a paint or sand corporation
- **Identify potential partner.** We will NOT invest in manufacturing this product ourselves other than to supply samples to potential partners





Cost needs for Year 1

- Our immediate needs are Lab Space, Lawyer fees, Patent/Trademark, & Travel costs
- Initial prototype is already made!
- Samples will be sent to potential collaborators starting mid-June

Year 1 Costs

Requirement	Cost/ item	Total Cost
Co-founder base pay	\$55k + 10% health ins. each	\$180k
Lawyer		\$20k
Patents	\$3k	\$6k
Trademarks	\$2k	\$4k
Travel		\$10k
Equipment		\$10k
Lab Space	~\$500/month	\$12k
TOTAL		\$242k

~\$250k total for 1st year



Other Heat Coating Applications

- SkyMelts:
 - Temporary solar-activated spray coating for planes, vehicles, machines
 - Airplane De-icer
 - Ice-resistant coatings market has strong growth rate (CAGR) of 23.3% through 2023
- SeedBalls (Protective seed shells)
 - Protects seeds from harsh weather and animals in difficult to farm areas
- Soil fertilizer
 - Improved soil penetration, soil structure (nutrient storage & moisture retention)

Founding Team



Dr. Jared Day
Co-Founder & CEO

Nano-Physicist with expertise in top-down & bottom-up fabrication methods in addition to nano-particle based solar energy applications

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Dr. Zav Shotan
Co-Founder

Optical Physicist and Software Architect Engineer who has been the technical lead on multiple start-up ventures and is experienced building optical systems for microscopy and solar concentration systems.

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Dr. Oara Neumann
Co-Founder

Nano-physicist & Chemist with several research articles using nano-particles for desalination, solar steam generation (inventor), & drug delivery

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Summary

- Reduces harm to the environment while also passively melting ice/snow using sunlight
- The best alternative to salts & chemical de-icers the market needs
- is completely biodegradable!
- Extend-able to other heat-coating applications