Pipe Knight

Red B
The Problem

250,000 Homes each year flooded
$15,000 Average insurance claim

1. State Farm Fire and Casualty Co.
Pipe Knight

A pressure-relieving faucet to protect your pipes.

Flow control knobs
Pressure release valve
Compatible to existing supply tube

Vision

Mock Up
Pressure-Induced Bursting

1. Ice blockage forms.
2. Ice expands. Pressure & stress increase.
3. Pipe splits due to stress.
Pipe Freeze Experiment

Styrofoam box

Dry Ice

Water-filled Pipe

Upstream

Downstream

6% larger than upstream

(p < 0.05)
## Product Contract

<table>
<thead>
<tr>
<th>Customer Need</th>
<th>Product Attribute(s)</th>
<th>Engineering Specification</th>
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</thead>
<tbody>
<tr>
<td>Relieves high pressure</td>
<td>Pressure threshold</td>
<td>100 - 500 psi</td>
</tr>
<tr>
<td>Easy to install</td>
<td>Compatibility</td>
<td>Requires zero adaptors</td>
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<tr>
<td>Long lasting</td>
<td>Product life</td>
<td>15- 20 years</td>
</tr>
<tr>
<td>Matches customer's aesthetic preferences</td>
<td>Appearance</td>
<td>Number of styles offered</td>
</tr>
</tbody>
</table>
Survey Results

- New Faucet: 40% of 36 surveyed
- New Supply Tubes: 60% of 36 surveyed

Target Selling Price: $150
Future Developments

Valves connected to supply tubes