



Snow/Ice Event Data Summary
2017-2018
(10/27/17 – 4/17/18)

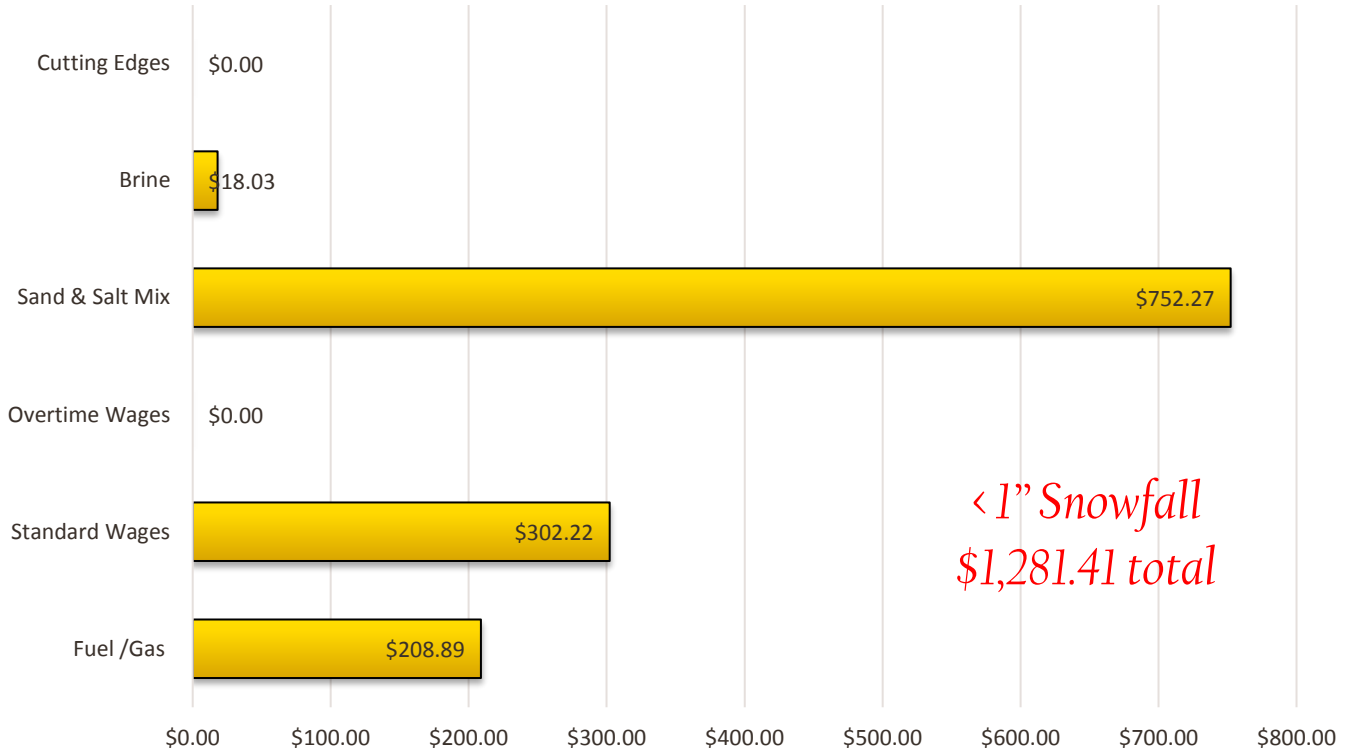
In this summary, you'll find collected data from the 2017-2018 (10/27/17-4/17/18) snow/ice events. During snow/ice events we always go through the same motions. However, there are many variables that attribute to the fluctuation in cost for each event. These variables are listed (but not limited to) below. Keep in mind that some of these variables control the length of time it takes to clear all the city streets, parking lots, & alleys. Thus, creating extra cost.

- ✓ *Depth of Snow*
- ✓ *Density of Snow (Dry Fluffy or Wet)*
- ✓ *Staffing For Street Department (Illnesses or Vacation)*
 - ✓ *Contractor Availabilities*
- ✓ *Equipment Breakdowns*
- ✓ *Wind (Could Cause Re-Plowing)*
- ✓ *Days Of The Week – (Extra Cost For Working on Weekends and/or Holidays)*
- ✓ *Time Of The Year- (Snow Melts Faster When Closer to Spring)*
- ✓ *Brine Pre/Post Treatment (Liquid Deicing Before/During Snow Event)*
 - ✓ *Melts from Bottom Up. Reduces Snow To Haul*

Each event has been broken down into individual data sheets. You'll find the following information to be included for each event:

- *Total Overall Cost of All the Below Combined as well as broken down into individual costs*
 - *Total Contractor Charges*
 - *Total Cutting Edge Costs*
 - *Total Sand/Salt Mix Costs*
 - *Total Standard Wages*
 - *Total Overtime Wages*
 - *Total Fuel/Gas Costs*
- *Total Accumulation*
- *Temperatures Per Day*
- *All Pertinent Day Information Such As:*
 - *Days of the week the event occurred.*
 - *If it was a holiday.*
 - *If the staff worked on the weekend. If so, what day(s)*
- *What time snow clearing began and ended (from start of plowing to end of plowing)*
- *The workforce ratio of hired contractors vs. street department staff*

Event #1 – 10/27/17



Days of the Week This Occurred: Friday

Was This A Holiday? No

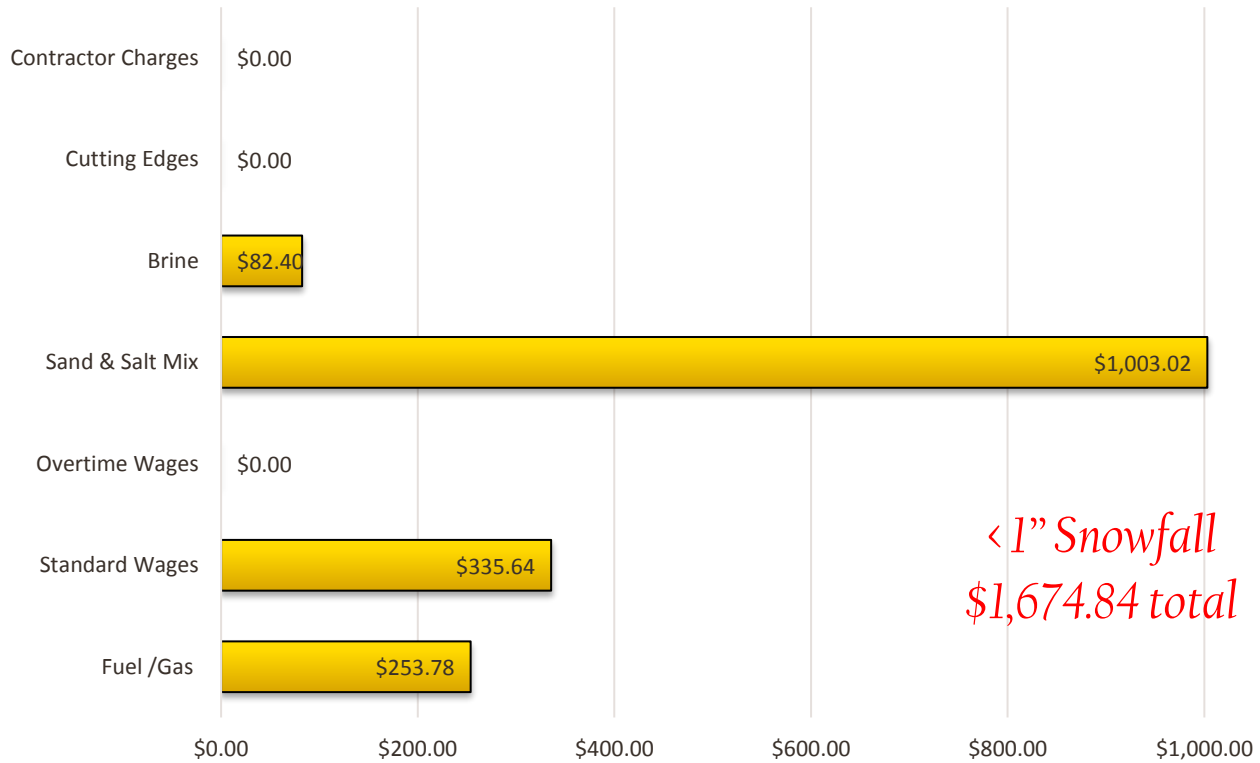
Did The Staff Work The Weekend? No.

Temps per Day:

Hi: 52 Lo: 28

- Received a light dusting of snow that was melting as it came down. However, temperatures fell and caused the melted snow to freeze. Thus, causing slippery roadways.
- Wind Speeds: NW 25-35 with gusts up to 55mph.
- Post treated with brine.
- 5 total staff members used.

Event #2 – 11/3/17 – 11/4/17



Days of the Week This Occurred: Friday

Was This A Holiday? No

Did The Staff Work The Weekend? No.

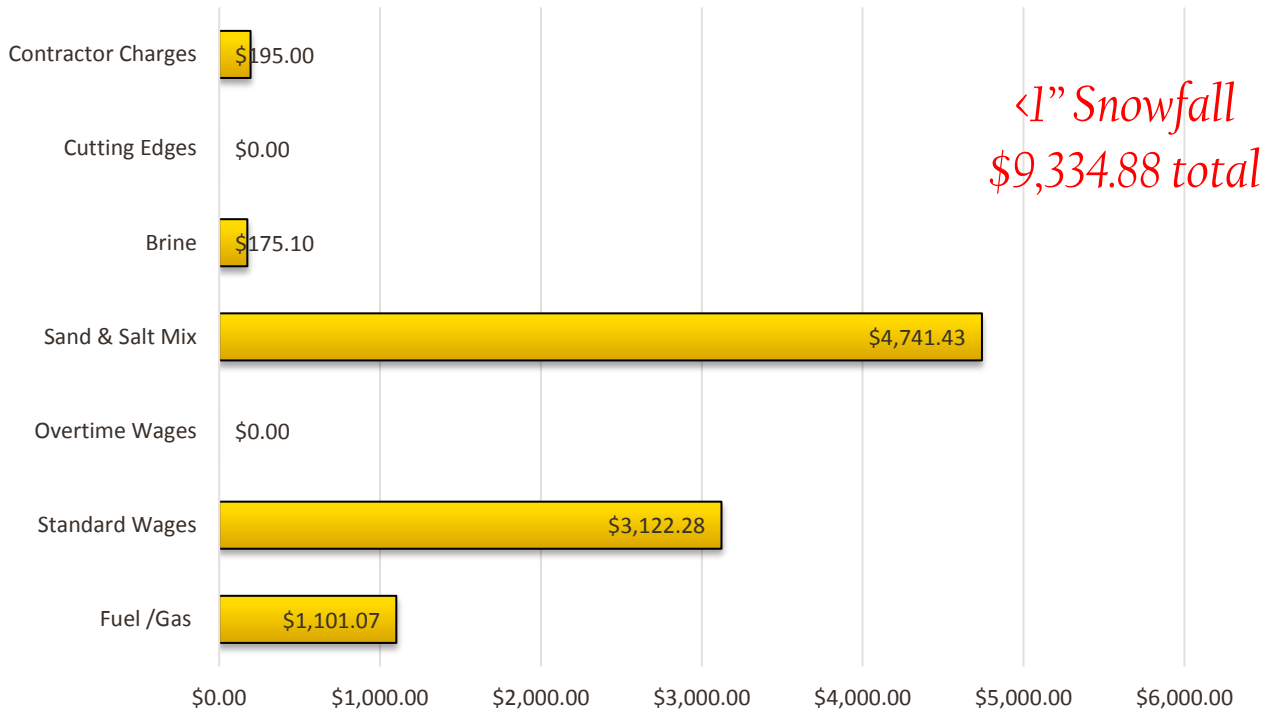
Temps per Day:

Hi: 34 Lo: 26

Hi: 45 Lo: 27

- Wind Speeds: ESE 13 with gusts up to 20mph.
- Post treated with brine.
- 7 total staff members used (combined quantities through each day to end of event).

Event #3 – 12/4/17 – 12/5/17



Days of the Week This Occurred: Monday & Tuesday

Was This A Holiday? No

Did The Staff Work The Weekend? No.

Temps per Day:

Hi: 37 Lo: 10

Hi: 23 Lo: 11

➤ Wind Speeds

- 12/4/18: NW 17 with gusts up to 44mph.
- 12/5/18: NW 18 with gusts up to 31mph

➤ Post and pretreated with brine 12/4/18 only.

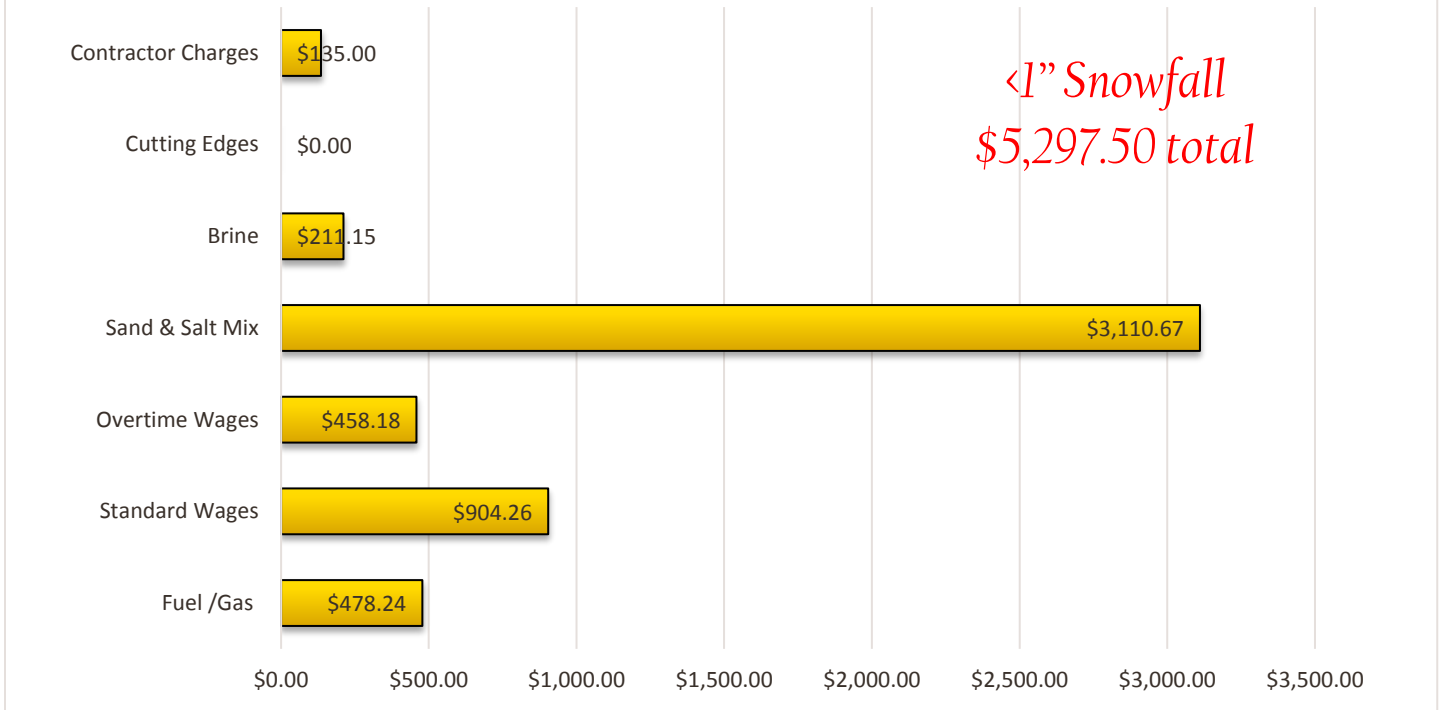
➤ Early morning fog turned into a fine mist creating slippery roads.

- Sand/salt mission!!

➤ 16 total staff members used (combined quantities through each day to end of event).

- Contractor cleared Wellness Center & Library.

Event #4 – 12/13/17 – 12/14/17



Days of the Week This Occurred: Wednesday & Thursday

Was This A Holiday? No.

Did The Staff Work The Weekend? No.

Temps per Day:

Hi: 36 Lo: 18

Hi: 33 Lo: 20

➤ Wind Speeds

- 12/13/18: N NW 23 with gusts up to 50mph.
- 12/14/18: NW 10 with gusts up to 17mph

➤ Post treated with brine both days.

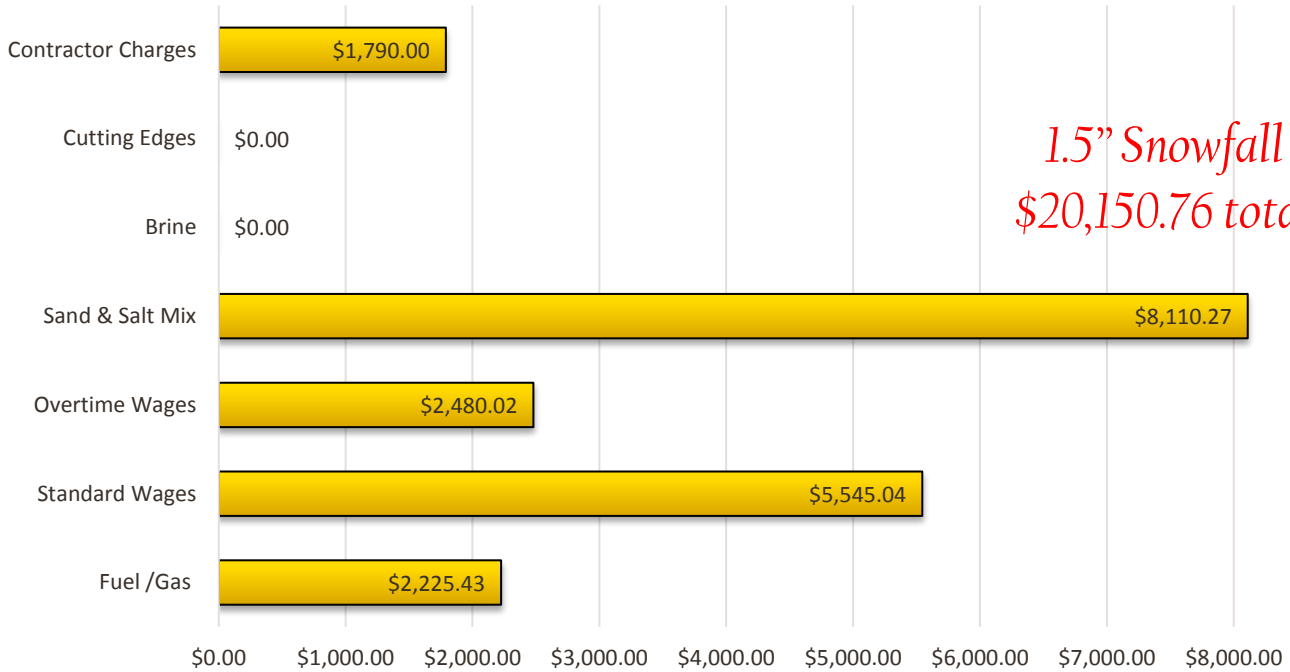
➤ Early misting rain created slippery roads.

- Sand/salt mission!!

➤ 8 total staff members used.

- 3 staff members were called in afterhours on 12/13/17.
- Contractor shoveled/deiced city owned sidewalks (including City Hall).

Event #5 – 12/28/17 – 1/4/18



1.5" Snowfall
\$20,150.76 total

Days of the Week This Occurred: Thursday to the following Thursday

Was This A Holiday? No.

Did The Staff Work The Weekend? Yes.

➤ Wind Speeds

- 12/28/17: WNW 14 with gusts up to 18mph.
- 12/29/17: NE 8 with gusts up to 13mph
- 12/30/17: NNE 8 with gusts up to 14mph
- 1/2/18: WSW 17 with gusts up to 28mph
- 1/3/18: NNW 9 with gusts up to 15mph
- 1/4/18: ESE 7 with gusts up to 10mph

Temps per Day:

Hi: 10 Lo: -8
 Hi: 3 Lo: -20
 Hi: -10 Lo: -22
 Hi: 10 Lo: -6
 Hi: 4 Lo: -12
 Hi: 8 Lo: -4

➤ 12/29/17: Doug retired. Short 1 staff member as of 12/30/17.

➤ Did not plow residential areas.

➤ 51 total staff members used (combined quantities through each day to end of event).

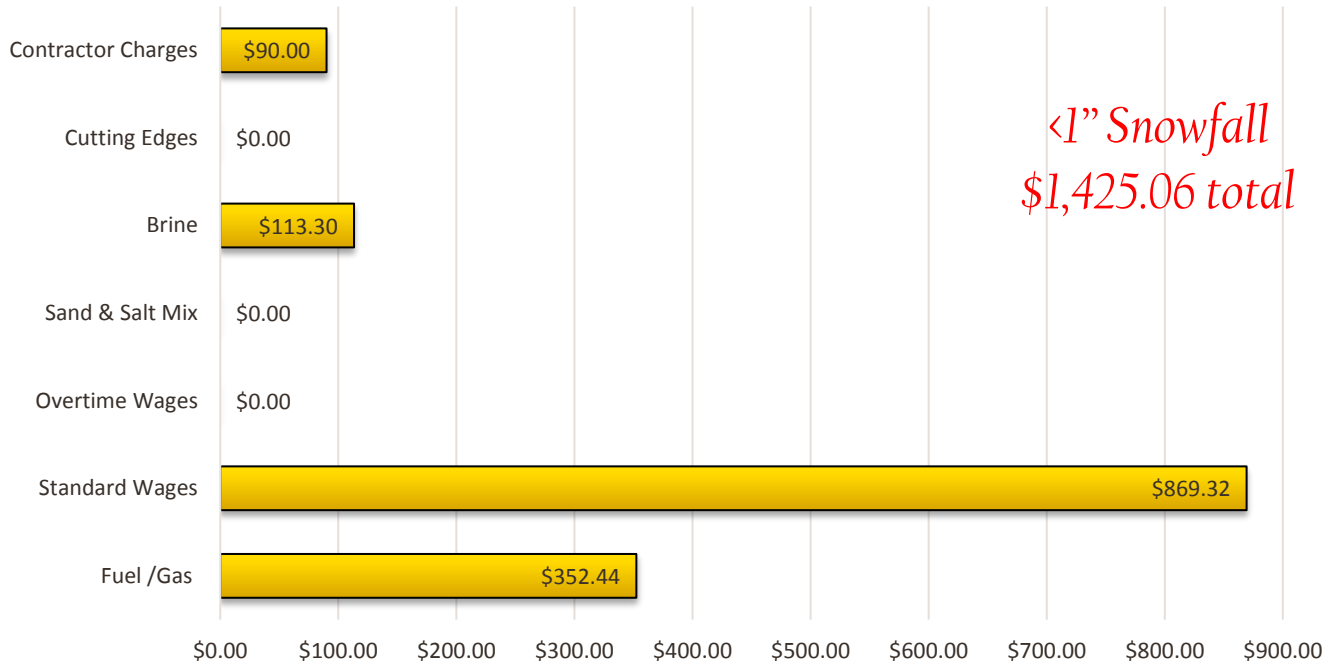
- 3 staff members were called in afterhours on 12/30/17 to sand highways & snow routes.

➤ Plowed Downtown area 12/30/17. 4 AM – 9:30AM

- Remaining days were spent sanding snow routes, highways, & residential areas.

➤ Contractors cleared Event Center, Wellness Center, & Library. Also, shoveled/deiced city owned sidewalks (including City Hall). Also a couple contractors used for hauling piles.

Event #6 – 1/11/18



Days of the Week This Occurred: Thursday

Was This A Holiday? No.

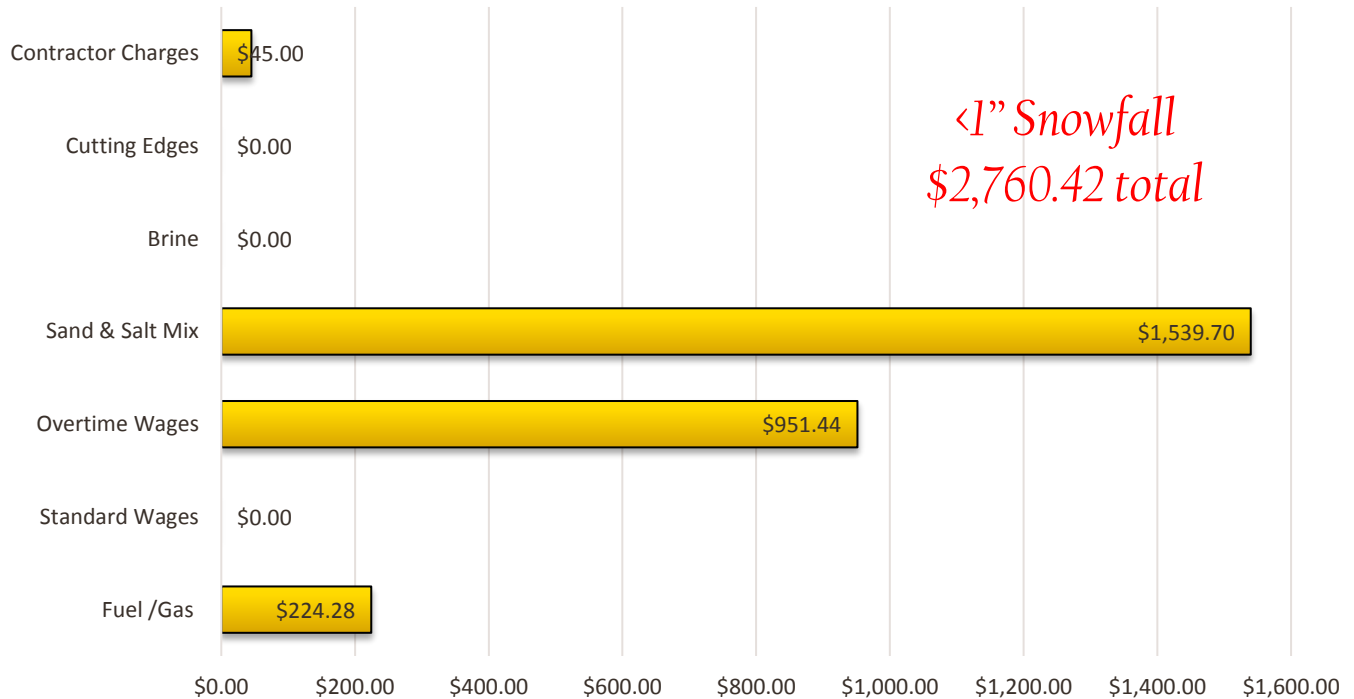
Did The Staff Work The Weekend? No.

Temps per Day:

Hi: 5 Lo: -15

- Wind Speeds
 - NNW 23 with gusts up to 31mph
- Pre-treated with brine 1/10/18.
- 5 total staff members used to kick back drifts.
- Contractor shoveled/deiced city owned sidewalks (including City Hall).

Event #7 – 1/14/18 – 1/15/18



Days of the Week This Occurred: Sunday & Monday

Was This A Holiday? Yes. Monday. Martin Luther King Day

Did The Staff Work The Weekend? Yes. Sunday. 4 staff members.

Temps per Day:

Hi: 21 Lo: -13

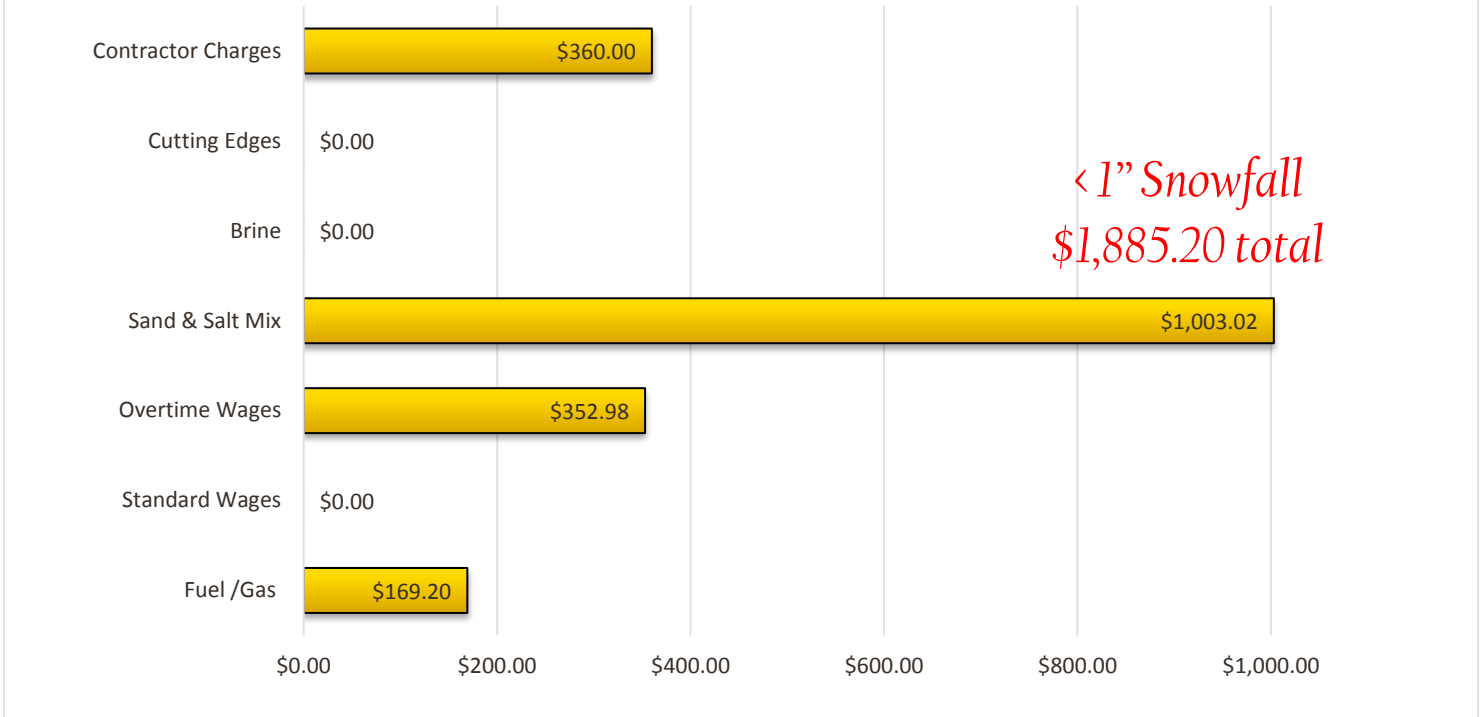
Hi: -5 Lo: -18

➤ Wind Speeds

- W 13 with gusts up to 18mph
- NNW 18 with gusts up to 24mph

- 6 total staff members used 1/14 & 1/15/18 (combined quantities through each day to end of event). Sanded highways, snow routes, lake, bypass, Willow Creek Drive, & school areas. Snow wasn't accumulating but it was packing in, creating slick spots.
- Contractor shoveled/deiced city owned sidewalks (including City Hall).

Event #8 – 1/27/18



Days of the Week This Occurred: Saturday

Was This A Holiday? No.

Did The Staff Work The Weekend? *Yes. Saturday.*

Temps per Day:

Hi: 33 Lo: 7

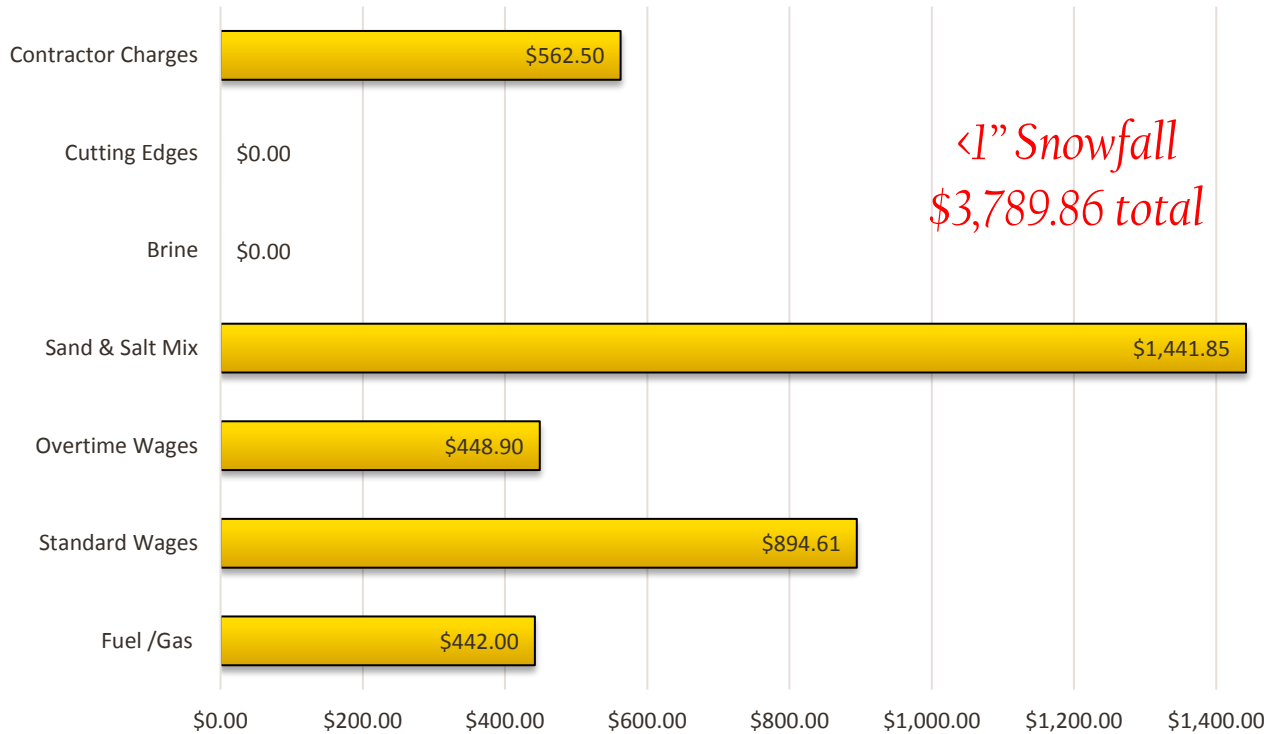
➤ Wind Speeds

- WNW 15 with gusts up to 31mph.

➤ *3 total staff members were called in to perform sanding operations.*

➤ *Contractor shoveled/deiced city owned sidewalks (including City Hall).*

Event #9 – 2/3/18 – 2/5/18



Days of the Week This Occurred: Saturday & Monday

Was This A Holiday? No.

Did The Staff Work The Weekend? *Yes. Saturday. 3 staff members.*

Temps per Day:

Hi: 13 Lo: -5

Hi: 11 Lo: -9

➤ Wind Speeds

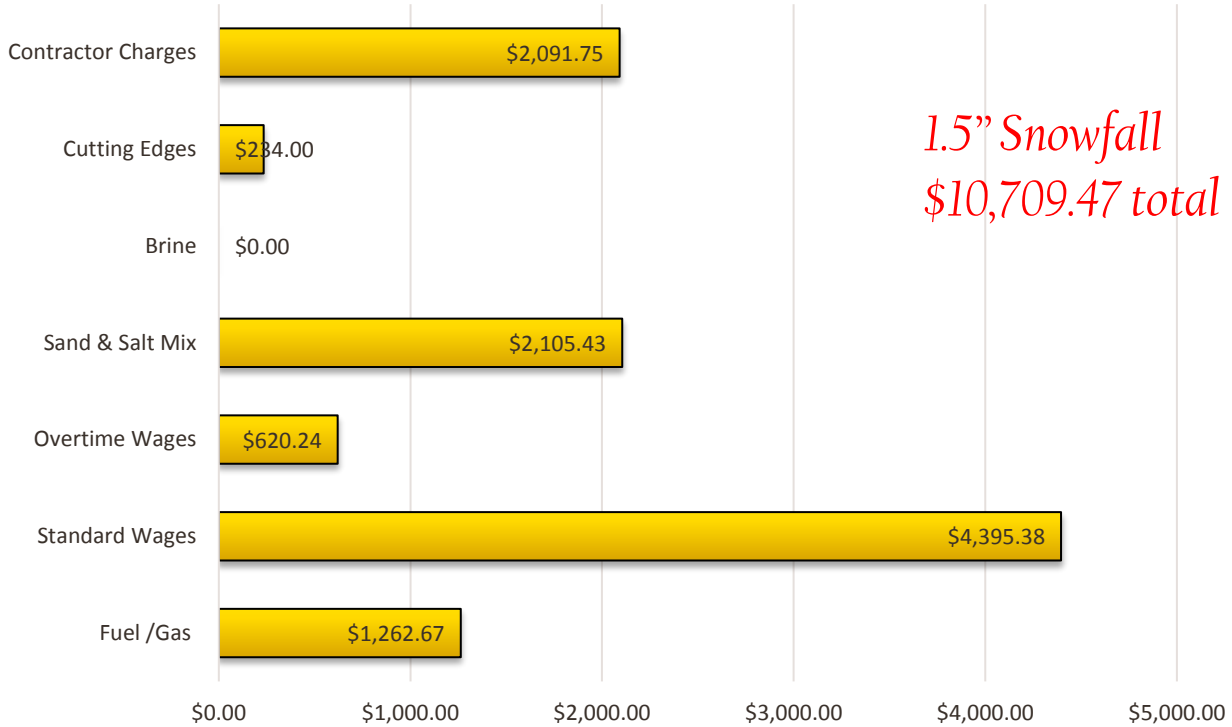
- NNE 14 with gusts up to 33mph
- WNW 10 with gusts up to 30mph

➤ *3 staff members were called in 2/3/18 to perform sanding operations.*

➤ *5 staff members were utilized 2/5/18 to perform sanding operations on snow routes, schools, lake, airport, east and south of Hwy. 212, highways, & downtown corridor.*

➤ *Contractors cleared Wellness Center & Library. Also, shoveled/deiced city owned sidewalks (including City Hall).*

Event #10 – 2/8/18 – 2/12/18



Days of the Week This Occurred: Thursday, Friday, & Monday

Was This A Holiday? No.

Did The Staff Work The Weekend? No.

Temps per Day:

Hi: 12 Lo: -5

Hi: 8 Lo: -6

Hi: 12 Lo: 6

➤ Wind Speeds

- ENE 8 with gusts up to 12mph
- NNW 8 with gusts up to 12mph
- ESE 7 with gusts up to 12mph

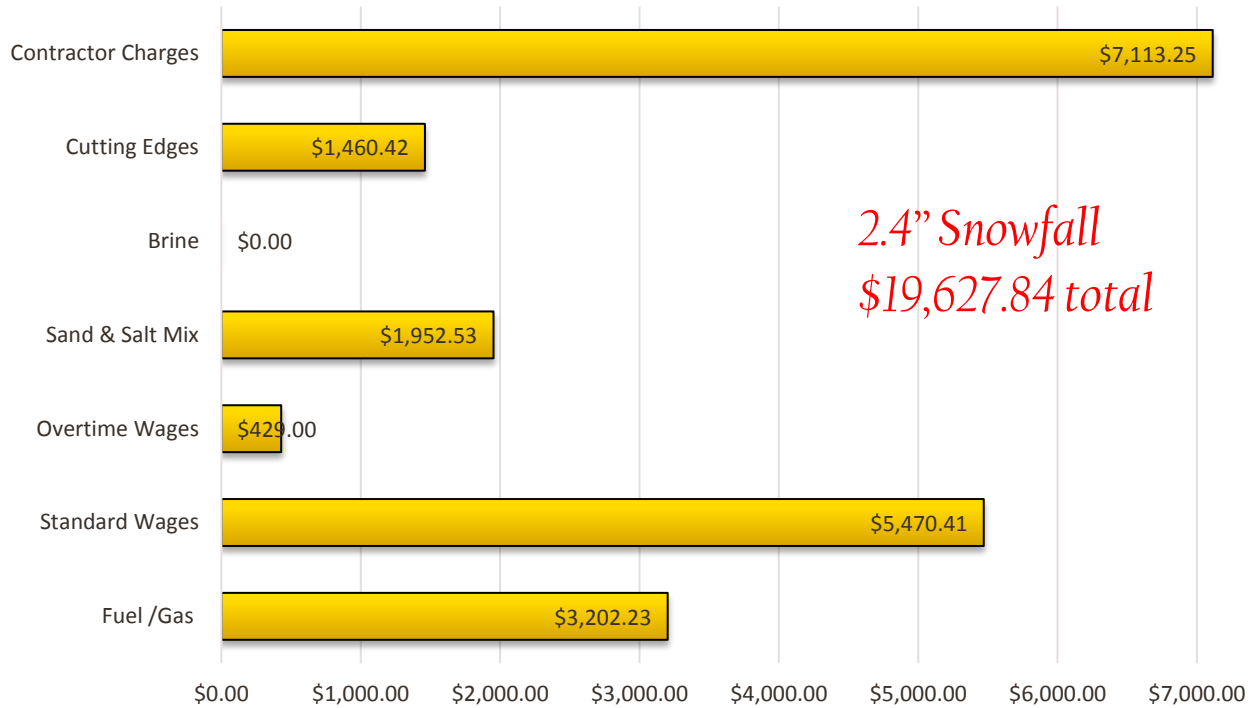
➤ 4 staff members were utilized on 2/8/18 and 5 staff members were utilized 2/9/18 to perform sanding operations on snow routes, schools, lake, highways, downtown corridor, & residential.

➤ 2/9/18: Contractors cleared Event Center, Wellness Center, & Library. Also, shoveled/deiced city owned sidewalks (including City Hall).

➤ 2/12/18: Cleared downtown corridor. 3AM – 7:30AM. All staff members used.

- 3 contractor snow trucks used. 1 contractor shoveled/deiced city owned sidewalks (incl. CH).

Event #11 – 2/19/18 – 2/21/18



2.4" Snowfall
\$19,627.84 total

Days of the Week This Occurred: Monday, Tuesday, & Wednesday

Was This A Holiday? Yes. Presidents Day. 2 Staff Members (sanding).

Did The Staff Work The Weekend? No.

Temps per Day:

Hi: 13 Lo: 2

Hi: 9 Lo: -10

➤ Wind Speeds

- NNE 18 with gusts up to 23mph
- NW 16 with gusts up to 22mph
- WSW 7 with gusts up to 14mph

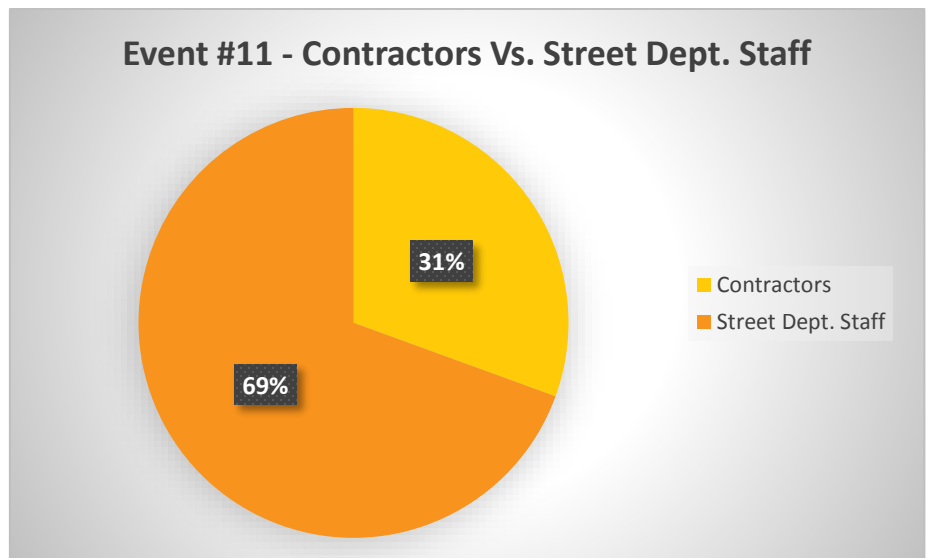
- 2/20/18: Street Department personnel in at 4AM to start cleaning highways, snow routes, & school areas.

- 2/21/18: Cleared downtown corridor. 3AM – 8:30AM

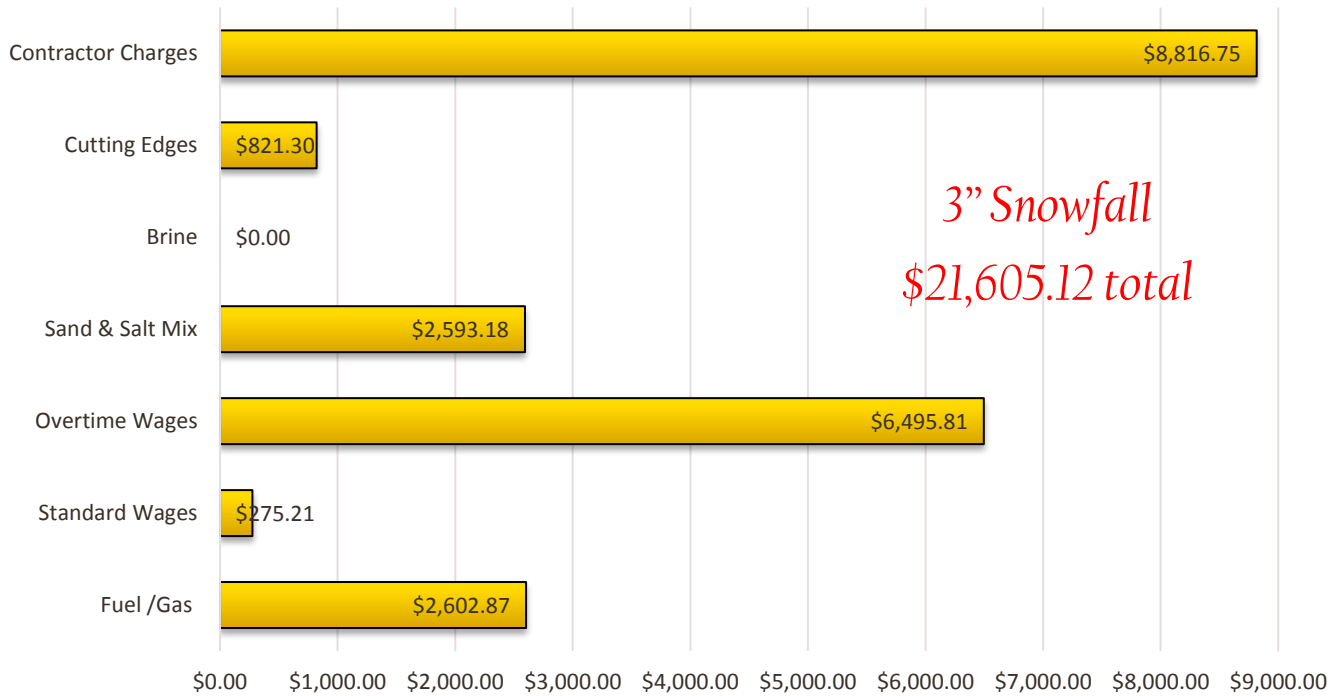
Started Cleanup: 4 AM-2/20/18

Completed Cleanup: 2:30 PM-2/21/18

34.5 Hours



Event #12 - 2/23/18 - 2/24/18



3" Snowfall
\$21,605.12 total

Days Of The Week: Friday & Saturday

Holiday? No.

Did The Staff Work The Weekend? Yes. Saturday

Temps per Day:

Hi: 24 Lo: 8

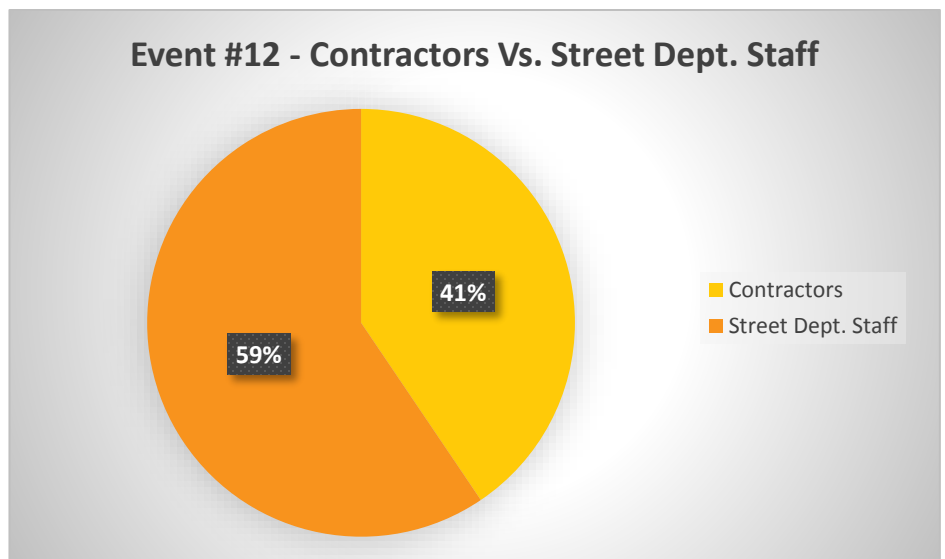
Hi: 22 Lo: 7

- Wind Speeds
 - WNW 12 with gusts up to 17mph
 - E 17 with gusts up to 29mph
- 2/23/18: All Street Department staff in at 4AM to start cleaning highways & snow routes.
- 2/24/18: Cleared downtown corridor. 4AM – 9AM
- Most staff members had already reached 40 hours for the week before this event occurred, which caused a lot of OT cost.

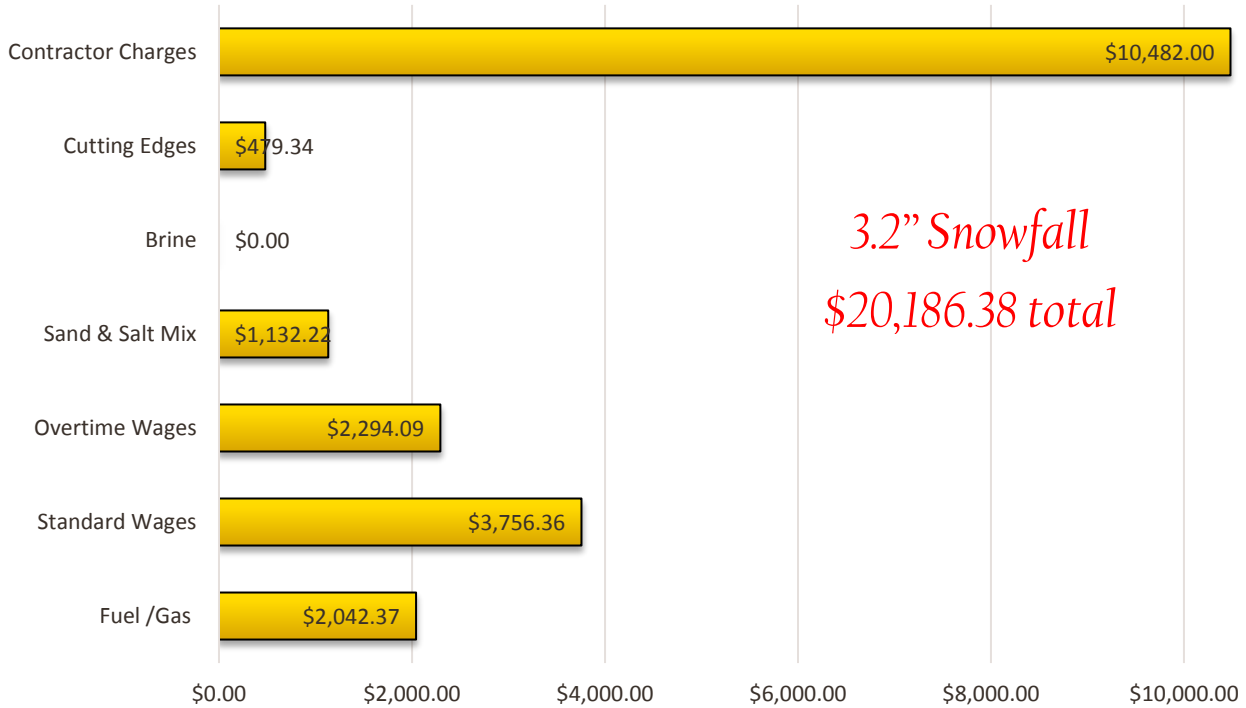
Started Cleanup: 4 AM-2/23/18

Completed Cleanup: 10 AM-2/24/18

30 Hours



Event #13 – 2/25/18 – 2/27/18



3.2" Snowfall
\$20,186.38 total

Days Of The Week: Sunday, Monday, & Tuesday
 Holiday? No.
 Did The Staff Work The Weekend? **Yes. Sunday.**
 Full Staff on the Weekend? **Yes.**

Temps per Day:

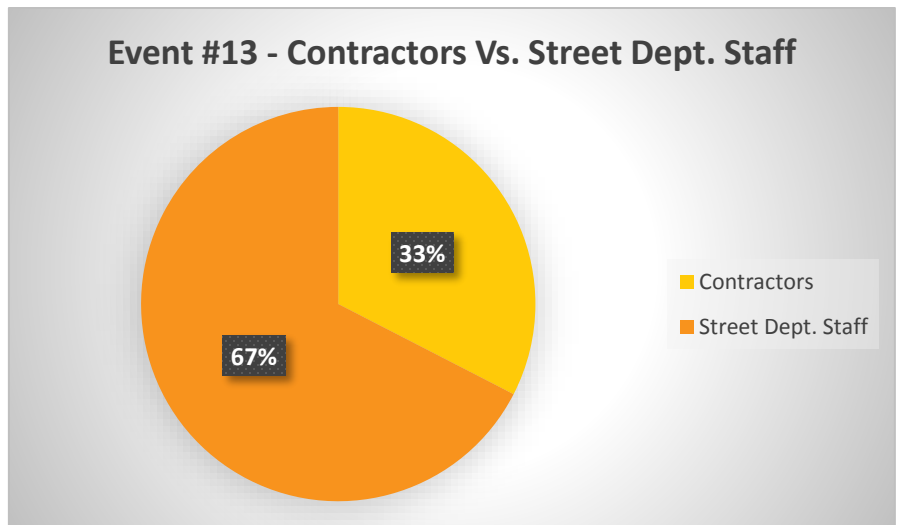
Hi: 25 Lo: 9
 Hi: 31 Lo: 12
 Hi: 35 Lo: 3

- Wind Speeds
 - WSW 14 with gusts up to 25mph
 - S 14 with gusts up to 21mph
 - N 13 with gusts up to 14mph
- Airport supplied 1 driver to assist with clearing entire event.
- 2/27/18: 3 staff members @ MSHA

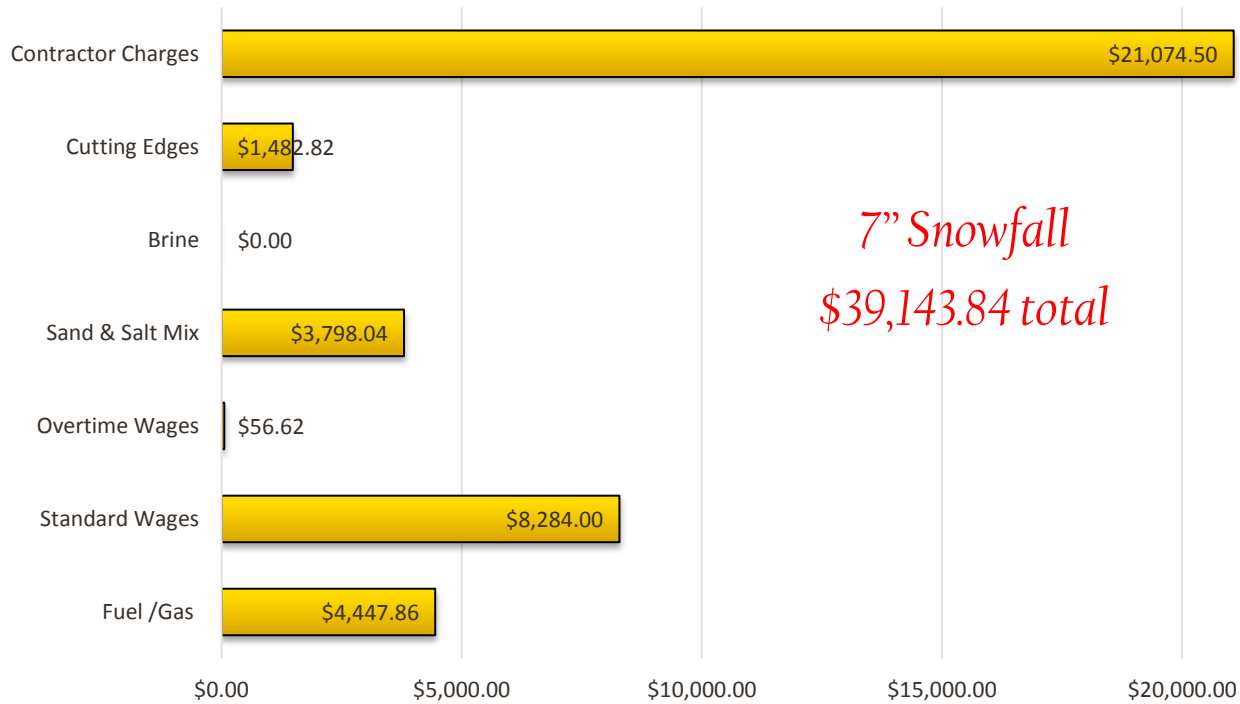
- 2/26/18: Cleared downtown corridor.
 - 2AM – 8:30AM
- No replacement for Doug. Todd transferred to landfill. Currently Street Department only has 9 FT employees.

Started Cleanup: 2 AM-2/26/18
 Completed Cleanup: 11:30 AM-2/27/18

33.5 Hours



Event #14 – 3/5/18 – 3/7/18



7" Snowfall
\$39,143.84 total

Days Of The Week: Monday, Tuesday, Wednesday

Holiday? No.

Did The Staff Work The Weekend? No.

Full Staff on the Weekend? No.

Temps per Day:

Hi: 33 Lo: 20

Hi: 27 Lo: 9

Hi: 25 Lo: 8

➤ Wind Speeds

- SW 14 with gusts up to 24mph
- N 20 with gusts up to 28mph
- NW 14 with gusts up to 25mph

➤ 3/5/18: Did NOT plow residential areas. Only 2-2.5" of accumulated snow (was still snowing). Kept Highways & Snow Routes open. Crew worked until 6:30pm.

➤ 3/1/18: Keith started FT. Replaced Doug.

➤ 3/6/18: Re-plowed highways & snow routes. Cleared residential areas from 9:30AM – 7PM

➤ 3/7/18: Cleared downtown corridor.

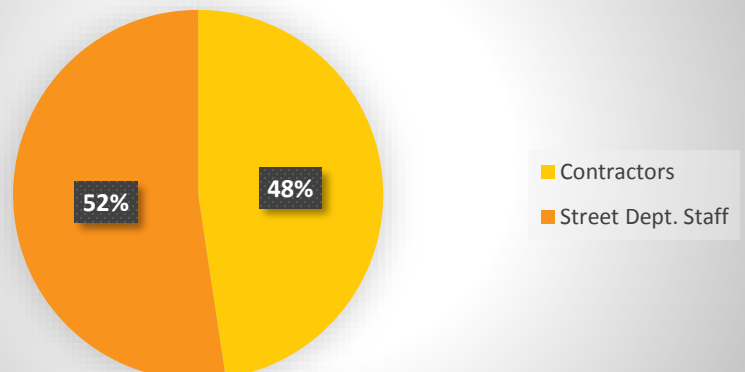
- 3 AM – 11 AM

Started Cleanup: 4:30 AM-3/5/18

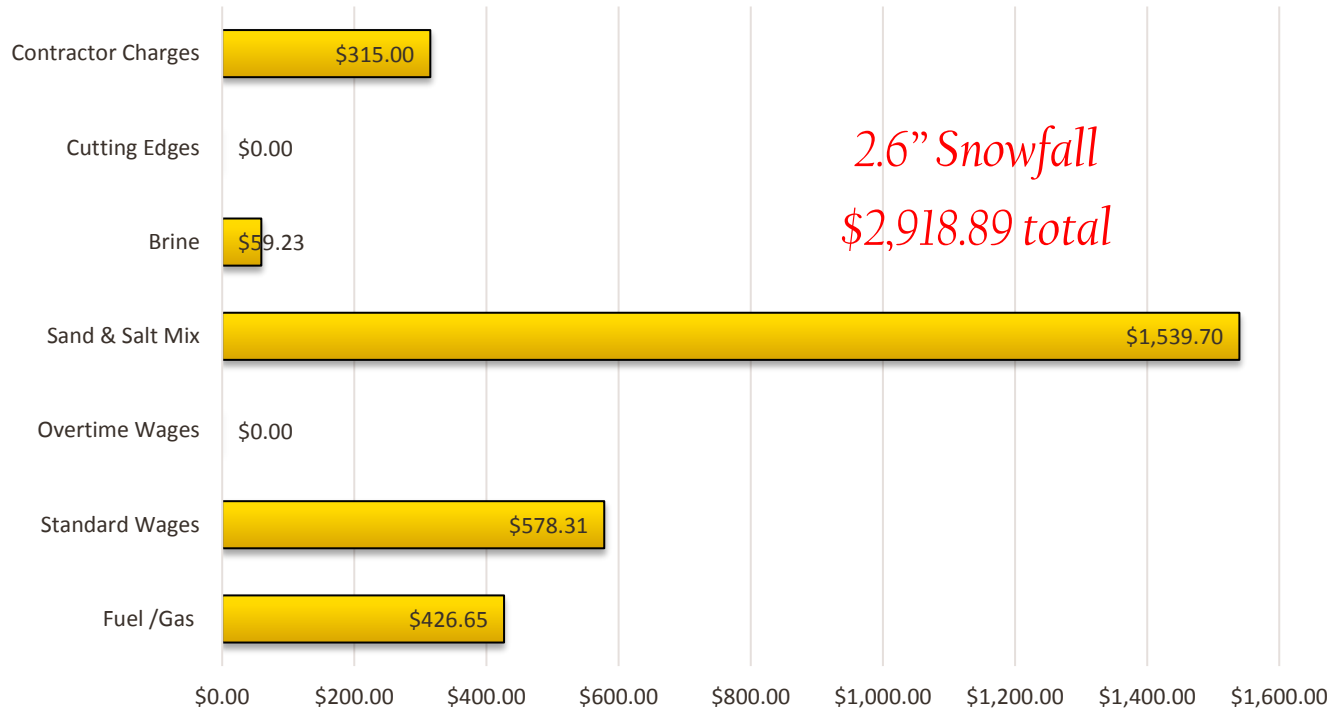
Completed Cleanup: 4 PM-3/7/18

59.5 Hours

Event #14 - Contractors Vs. Street Dept. Staff



Event #15 – 3/20/18



Days Of The Week: Tuesday

Holiday? No.

Did The Staff Work The Weekend? No.

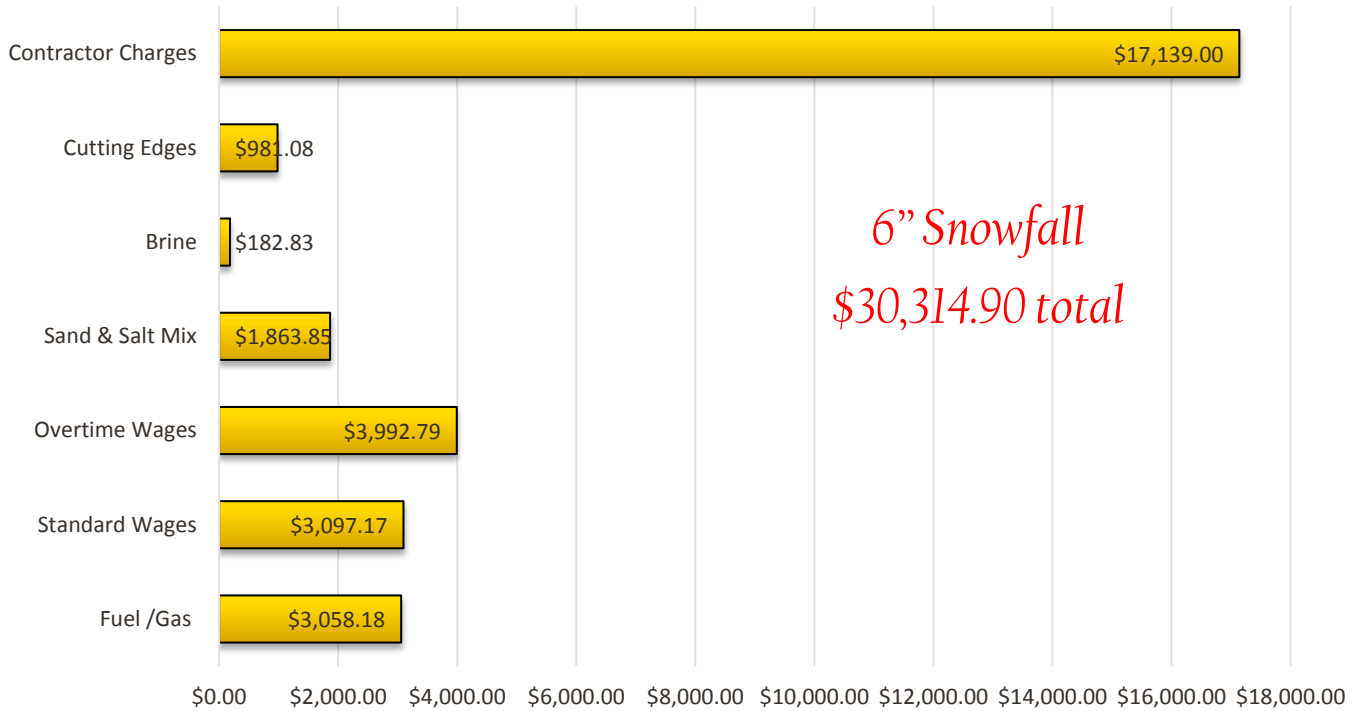
Full Staff on the Weekend? No.

Temps per Day:

Hi: 36 Lo: 25

- Wind Speeds
 - NNW 4 with gusts up to 8mph
- Post brined.
- Started melting by noon.
- 6 total staff members used to sand/brine.
- Contractor shoveled/deiced city owned sidewalks (including City Hall).

Event #16 – 3/23/18 – 3/26/18



6" Snowfall
\$30,314.90 total

Days Of The Week: Friday, Saturday, & Monday

Holiday? No.

Did The Staff Work The Weekend? *Yes. Saturday.*

Full Staff on the Weekend? *Yes. Cleared downtown.*

Temps per Day:

Hi: 34 Lo: 28

Hi: 34 Lo: 28

Hi: 34 Lo: 27

➤ Wind Speeds

- ESE 22 with gusts up to 30mph
- SSE 16 with gusts up to 23mph
- ESE 7 with gusts up to 9mph

➤ 3/23/18: Pre-brined highways & snow routes.

- Melted by 5 PM.

➤ 3/24/18: Re-plowed highways & snow routes. Cleared residential areas from 9:30AM – 7PM

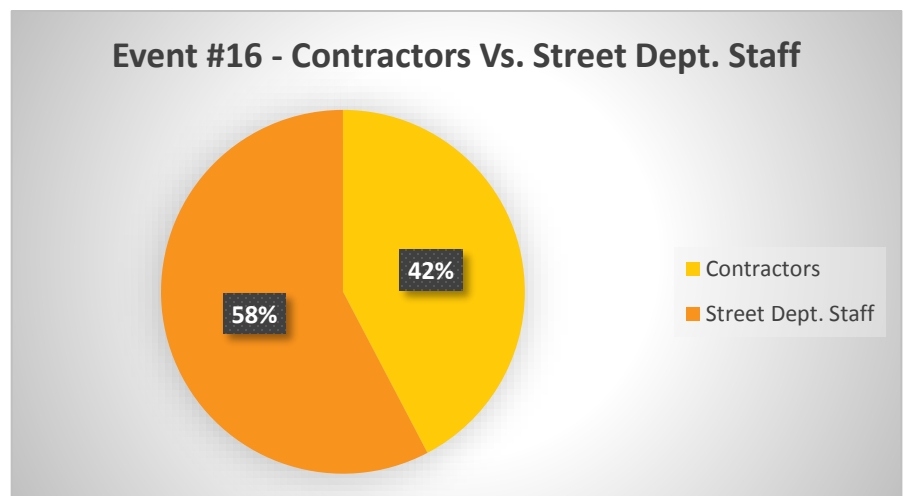
➤ 3/26/18: Cleared downtown corridor.

- 3 AM – 9:30 AM

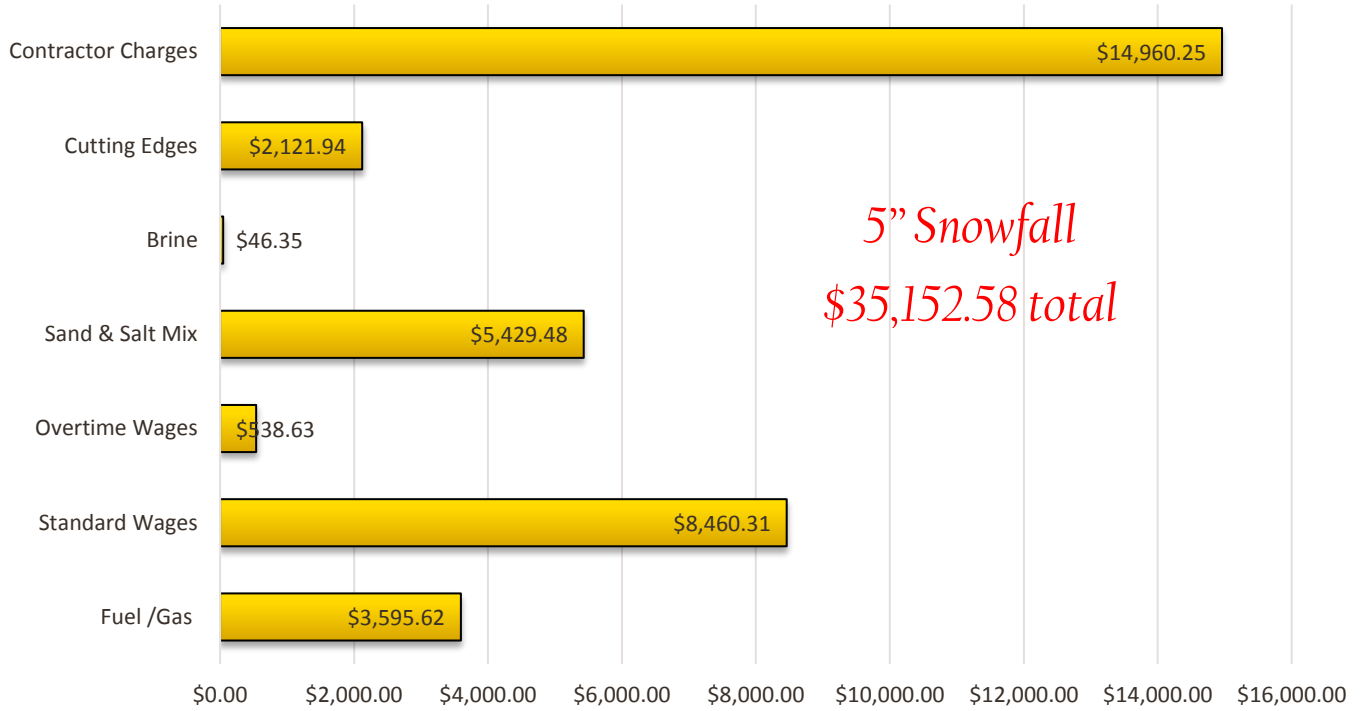
Started Cleanup: 4 AM-3/24/18

Completed Cleanup: 2:30 PM-3/26/18

58.5 Hours



Event #17 – 4/2/18 – 4/5/18



Days Of The Week: Monday, Tuesday, Wednesday, & Thursday

Holiday? No.

Did The Staff Work The Weekend? No.

Full Staff on the Weekend? No.

➤ Wind Speeds

- ESE 14 with gusts up to 20mph
- NNW 21 with gusts up to 36mph
- SSW 6 with gusts up to 12mph
- W 9 with gusts up to 23mph

Temps per Day:

Hi: 33 Lo: 16
 Hi: 15 Lo: 4
 Hi: 29 Lo: 15
 Hi: 35 Lo: 8

- 4/2/18: Snow accumulation of 1.5"
 - Post brined & sanded.
 - Received additional half inch overnight.

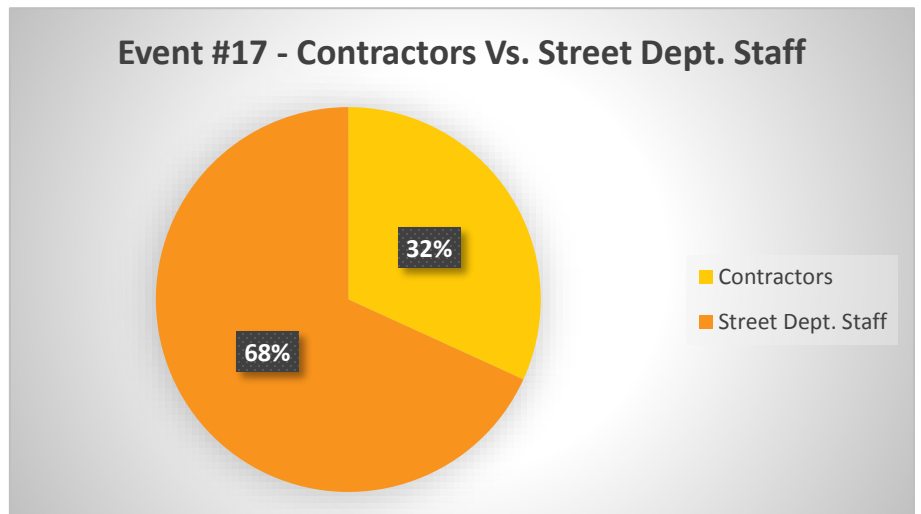
➤ 4/3/18: Plowed highways & snow routes. Received 3" additional accumulation.

- 4/4/18: Cleared downtown corridor.
 - 3 AM – 8:15 AM

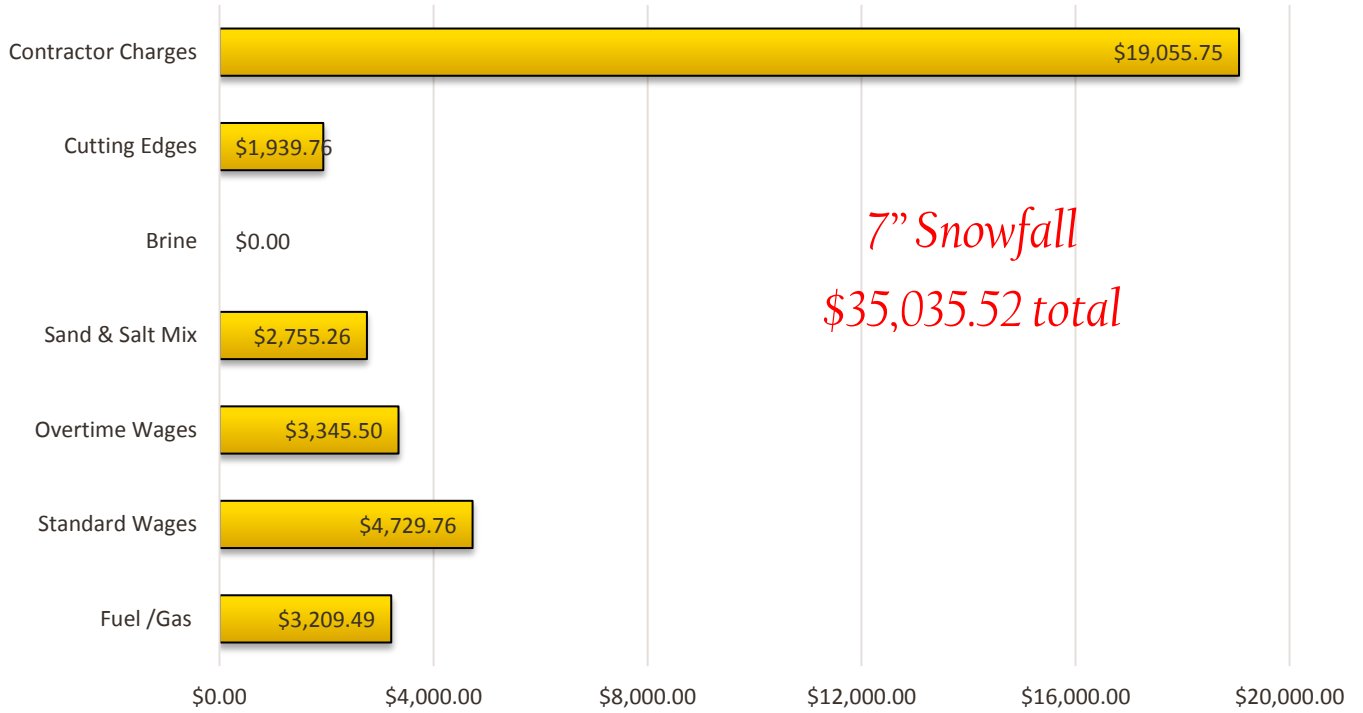
Started Cleanup: 3 AM-4/4/18

Completed Cleanup: 12:00 PM-4/5/18

33 Hours



Event #18 – 4/8/18 – 4/10/18



Days Of The Week: Sunday, Monday, & Tuesday
 Holiday? No.
 Did The Staff Work The Weekend? **Yes. Sunday.**
 Full Staff on the Weekend? **Yes.**

Temps per Day:

Hi: 29 Lo: 19
 Hi: 33 Lo: 23
 Hi: 44 Lo: 30

➤ Wind Speeds

- ESE 20 with gusts up to 28mph
- NW 6 with gusts up to 9mph
- SSW 6 with gusts up to 12mph

- 4/8/18: (Sunday, DT) 9 staff members called in to plow highways and emergency snow routes.

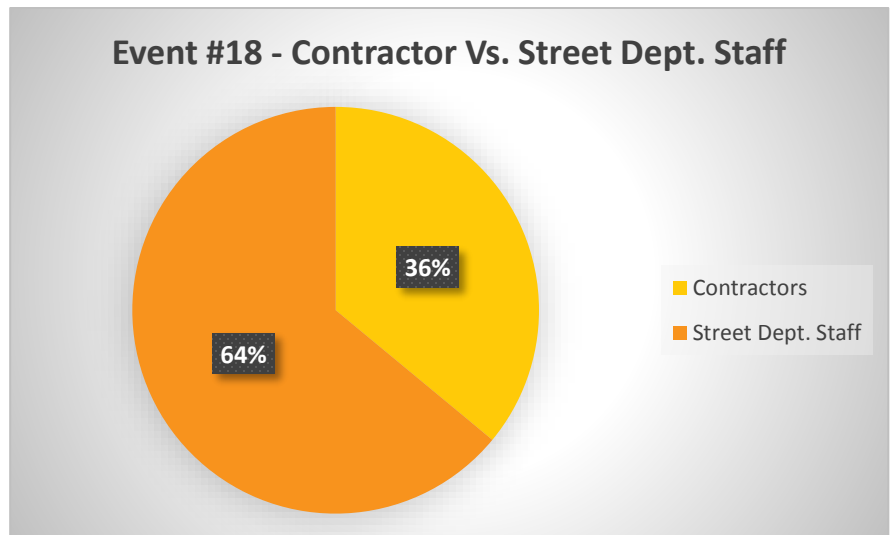
➤ 4/9/18: Cleared downtown corridor.

- 3 AM – 9:30 AM

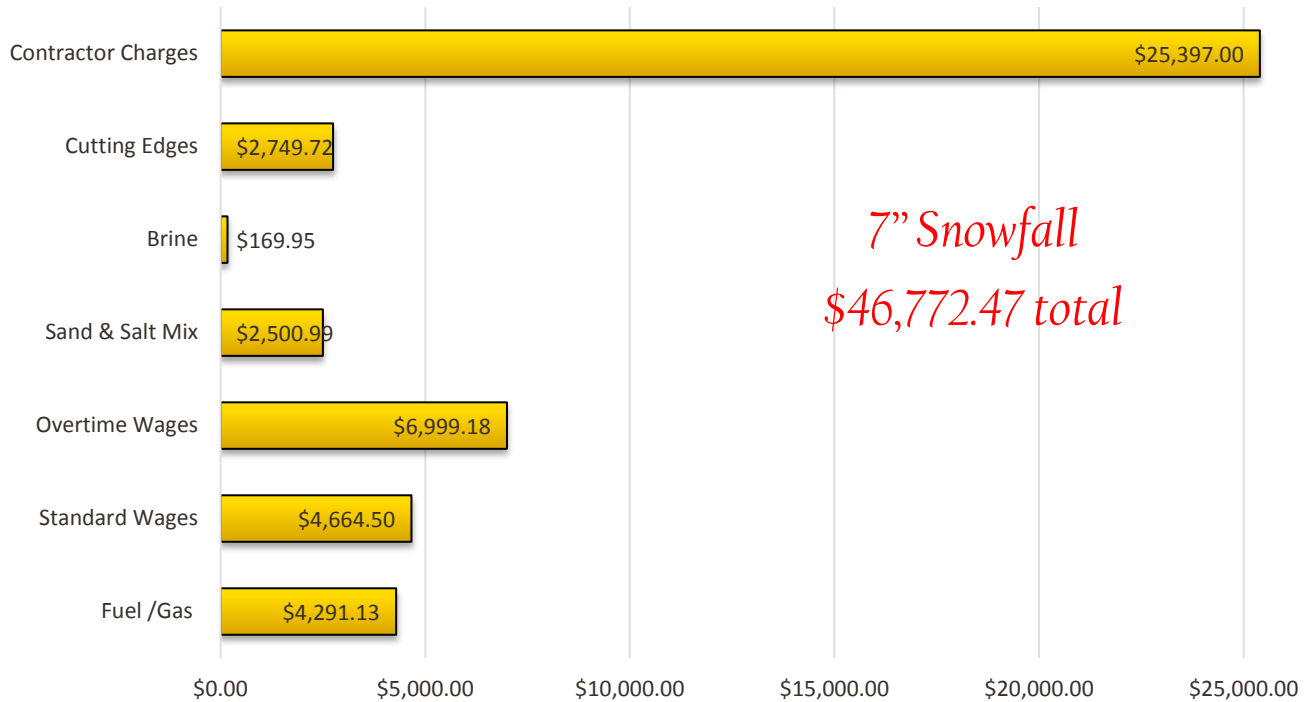
Started Cleanup: 9 AM-4/8/18

Completed Cleanup: 12 PM-4/10/18

51 Hours



Event #19 – 4/13/18 – 4/17/18



Days Of The Week: Friday, Saturday, Sunday, Monday, & Tuesday

Holiday? No.

Did The Staff Work The Weekend? *Yes. Saturday & Sunday.*

Full Staff on the Weekend? *Yes, Saturday. No, Sunday*

Temps per Day:

Hi: 33	Lo: 22
Hi: 28	Lo: 17
Hi: 32	Lo: 12
Hi: 36	Lo: 18
Hi: 37	Lo: 26

➤ Wind Speeds

- NNE 29 with gusts up to 50mph
- NNE 21 with gusts up to 31mph
- NNE 13 with gusts up to 18mph
- NNW 8 with gusts up to 12mph
- E 12 with gusts up to 18mph

➤ *4/12/18: Pretreated with brine.*

➤ *4/13/18: Low visibility. School out early. Sanded!*

➤ *4/14/18: Cleared highways, lake, S. bypass, & snow routes. TON of drifting! 5” received.*

- *Did NOT plow residential areas.*
- *Snow continued off and on during the evening into the following morning.*
- *2 contractors ran the S. bypass & east (main roads) twice.*

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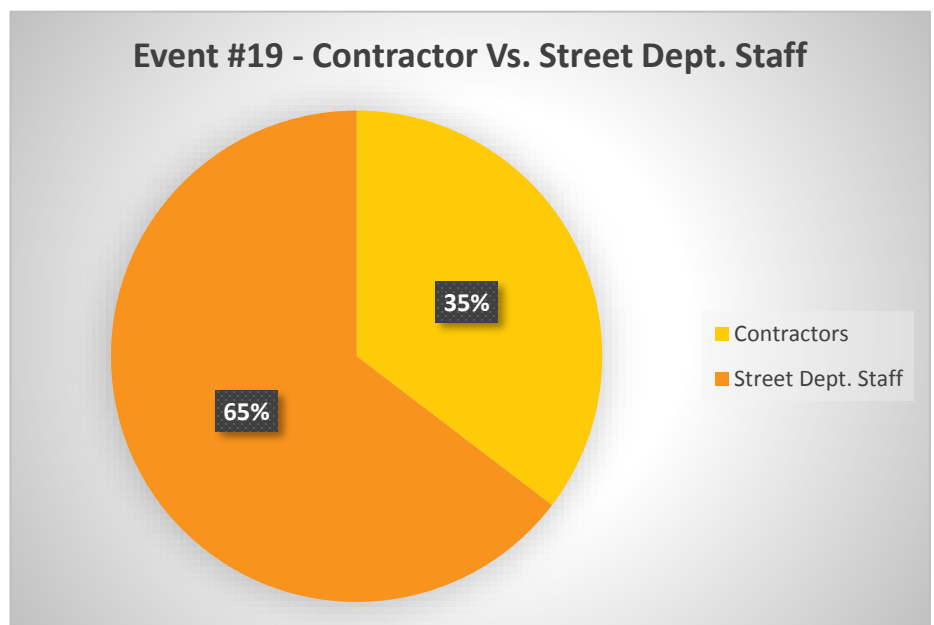
Event #19 – 4/13/18 – 4/17/18

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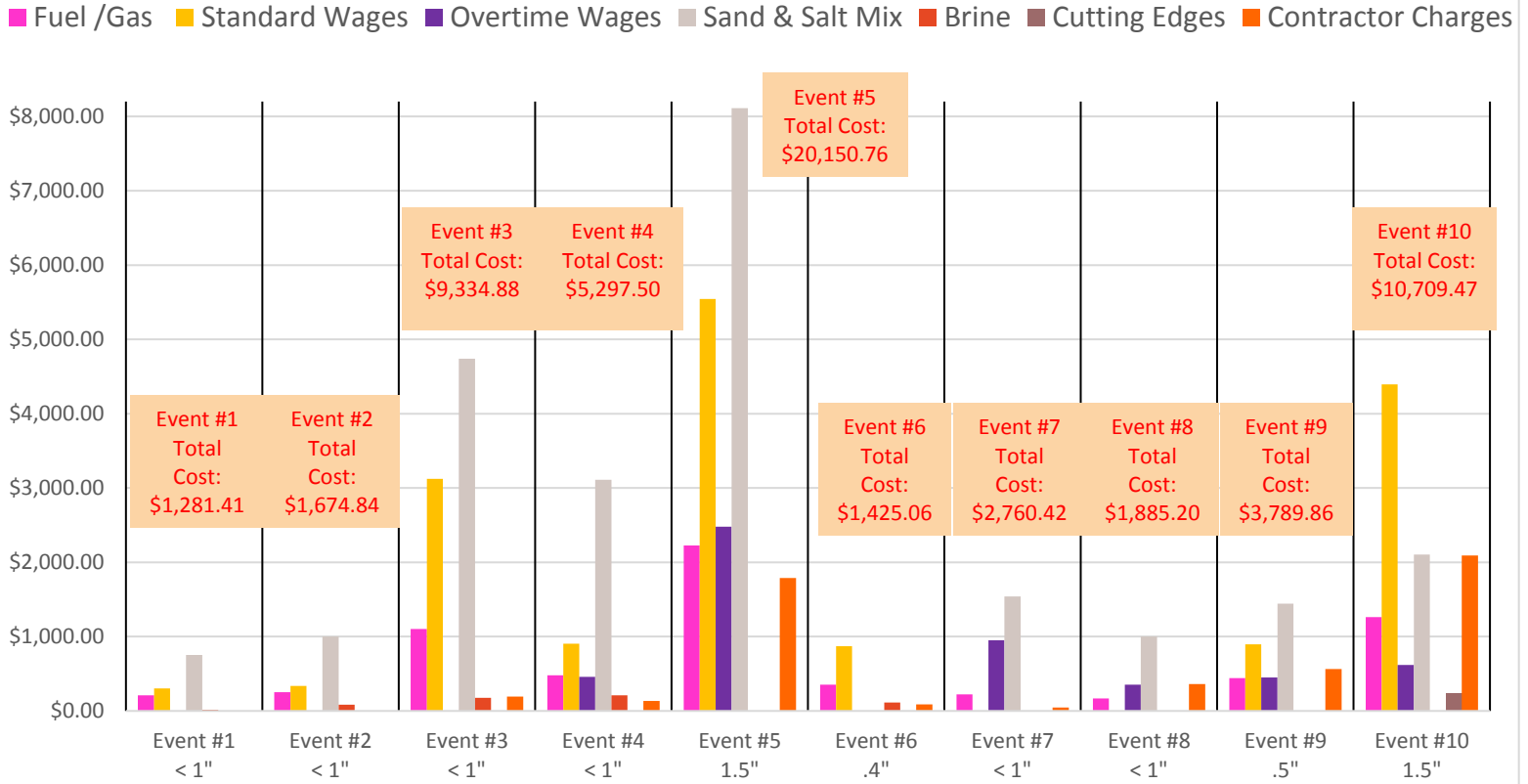
- **4/15/18:** Received half an inch overnight. Did NOT plow residential areas. Sanded & opened drifts.
 - Entire crew except for 2.
 - Some drifts as high as the loader windows.
- **4/16/18:** Cleared downtown corridor
 - 3 AM – 10:45AM
 - All contractors re-ran their routes due to snow and drifting that occurred on Saturday & Sunday.
 - Our staff re-ran highways and snow routes.

Started Cleanup: 5:30 AM-4/14/18
Completed Cleanup: 12:00 PM-4/17/18

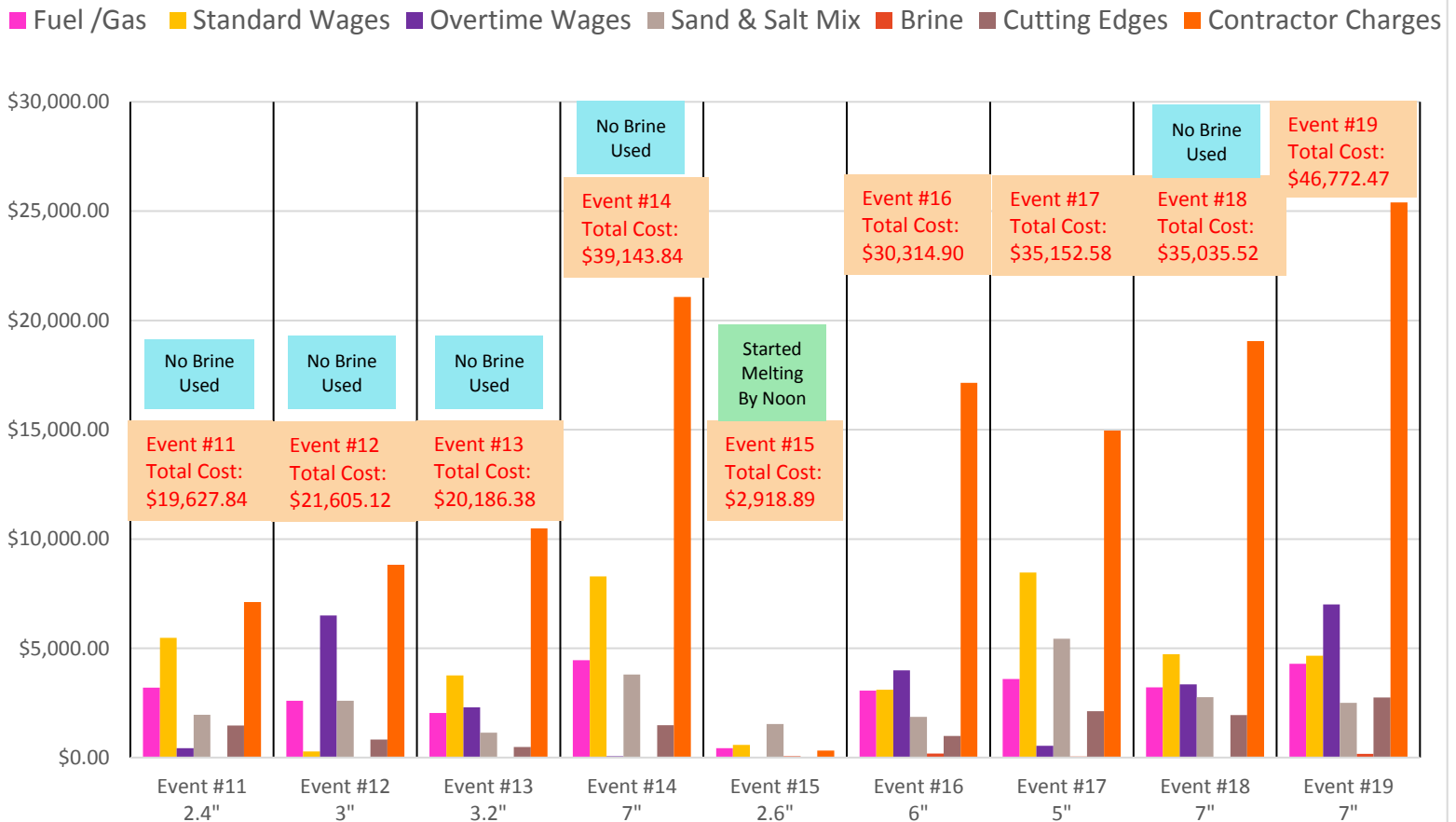
78.5 Hours



2017-2018 Minimal Snow/Ice Event Cost Breakdown Comparison



2017-2018 Major Snow/Ice Event Cost Breakdown Comparison



2017/2018

(10/27/17 – 4/17/18)

Individual Cost Breakdown per Category



Total Average Workforce Used For 2017/2018 (10/27/17 – 4/17/18) Snow Season

