Surviving Unpredictability

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VELOCITY
CONNECT + ACCELERATE + INNOVATE

LOGILITY Halo NGC Demand Solutions®

Always vs. Sometimes

> "Computers are good at ***always*** and people are good at ***sometimes.***"
>
> *–Paul Secraw*

- One of the challenges that we all face is that there seem to be fewer and fewer "always" events, and more and more "sometimes" events … and we need to find ways to help you deal with them."
- Fortunately, there are tools in DSX that help you address these sometime events … most of the time.

Challenges

- Face Competition from every Aspect
  - Quality-Cost-Time
- Continuous Improvement is Essential
  - Innovative yet flexible
  - Reduce Costs while improving service levels

- Utilize DSX to incorporate strategic plans for the “sometimes” events

Planned Interruptions

- Not all interruptions are unexpected. Many times they are planned but still disruptive.
  - Chinese New Year
  - Plant Shutdowns
  - Equipment Maintenance
  - Restricted receiving days
  - Cleaning or Sanitizing production units
  - Other Holidays

- **Strategic, integrated planning during these periods is vital**

DSX Functions to Manage Planned Interruptions

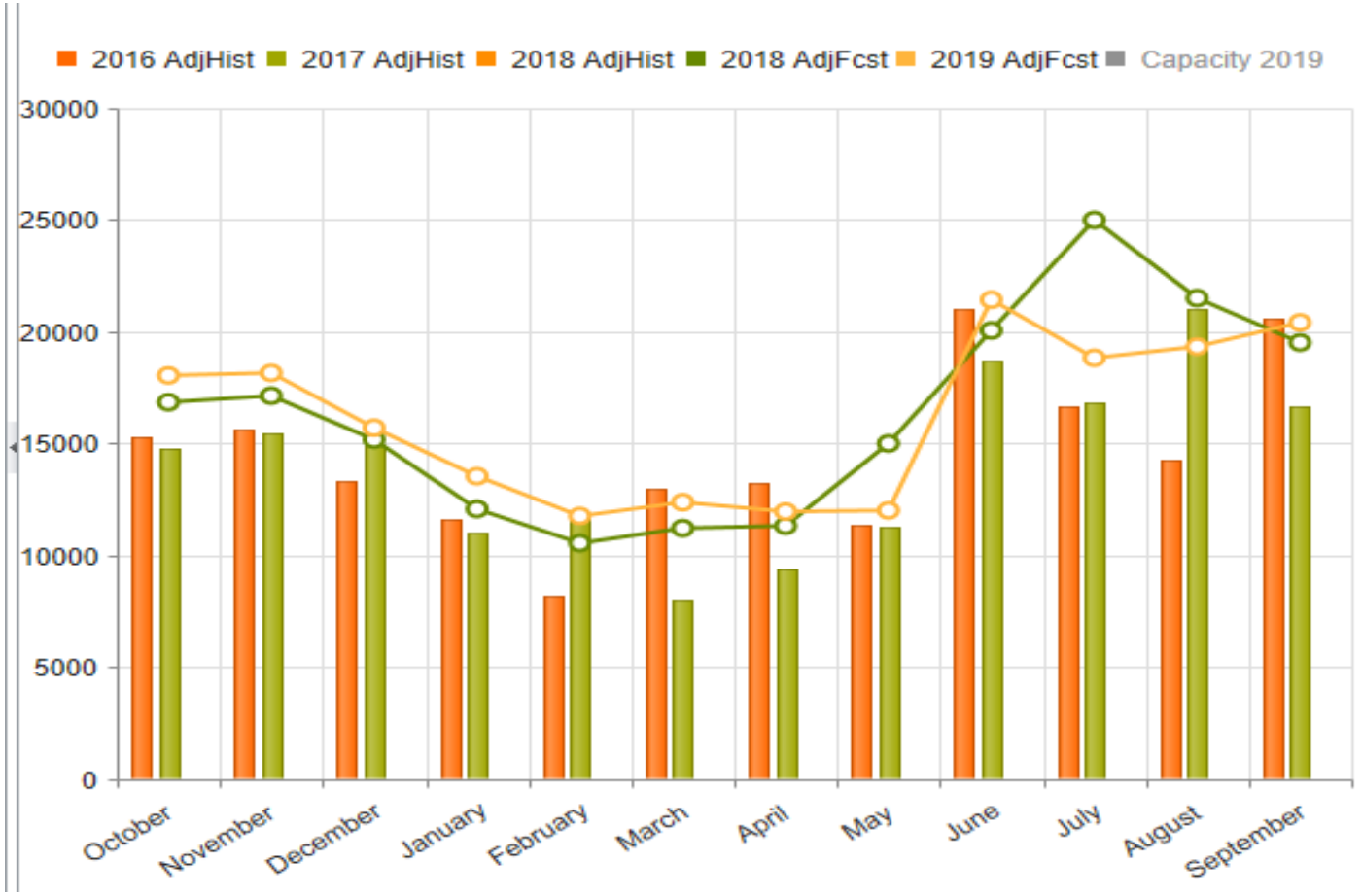
Supply Planning

- Closed Day Calendars
  - Applied within Order Plan by:
    - Vendor
    - Production Line
    - Category
    - Etc.
- Safety Time
  - Vary based on plan
    - Normal operation
    - Temporary increase or decrease of inventory
- Vendor
  - Temporary Vendor Change

Demand Planning

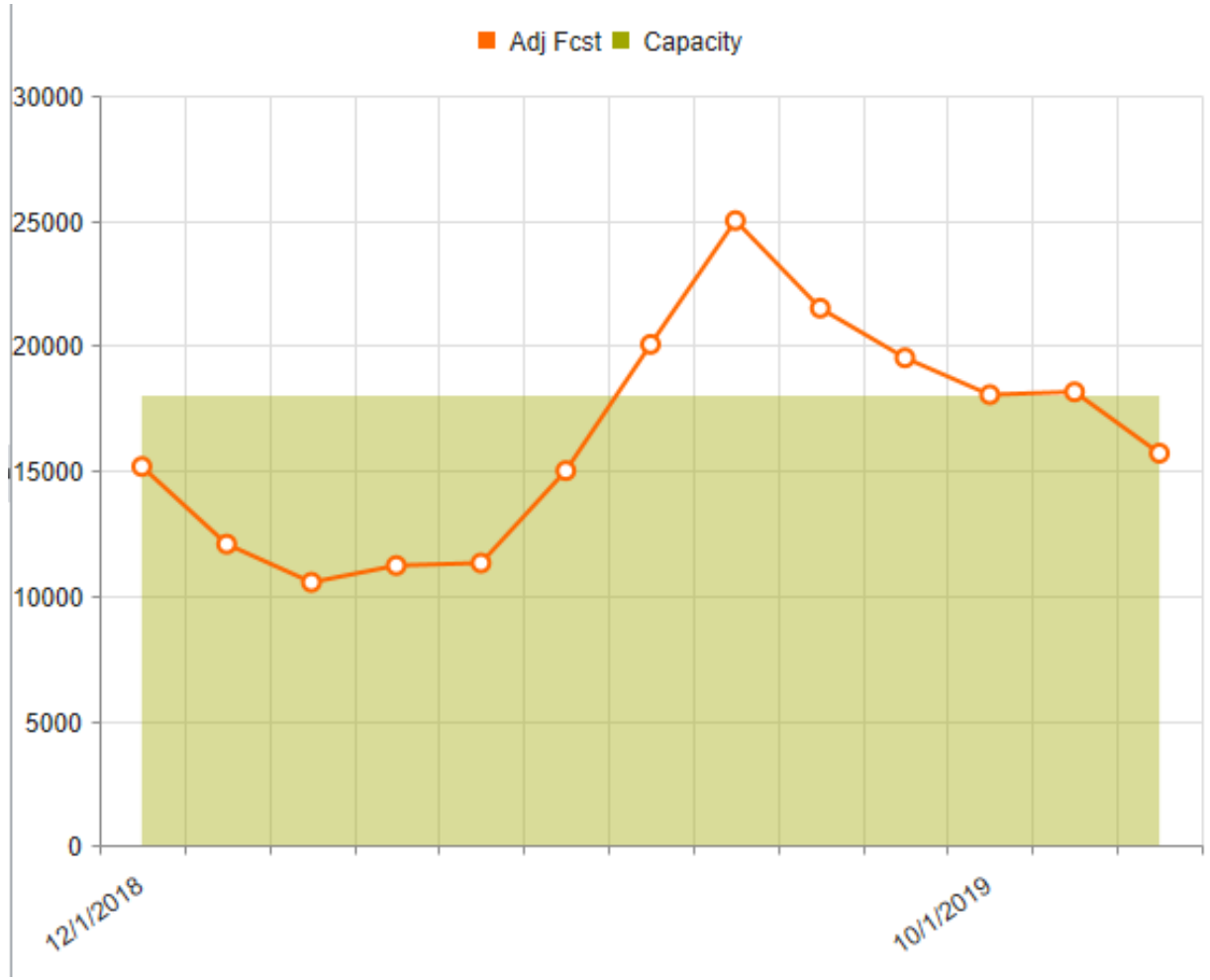
- Curves
  - Restrain or force demand seasonality

Seasonal Forecast



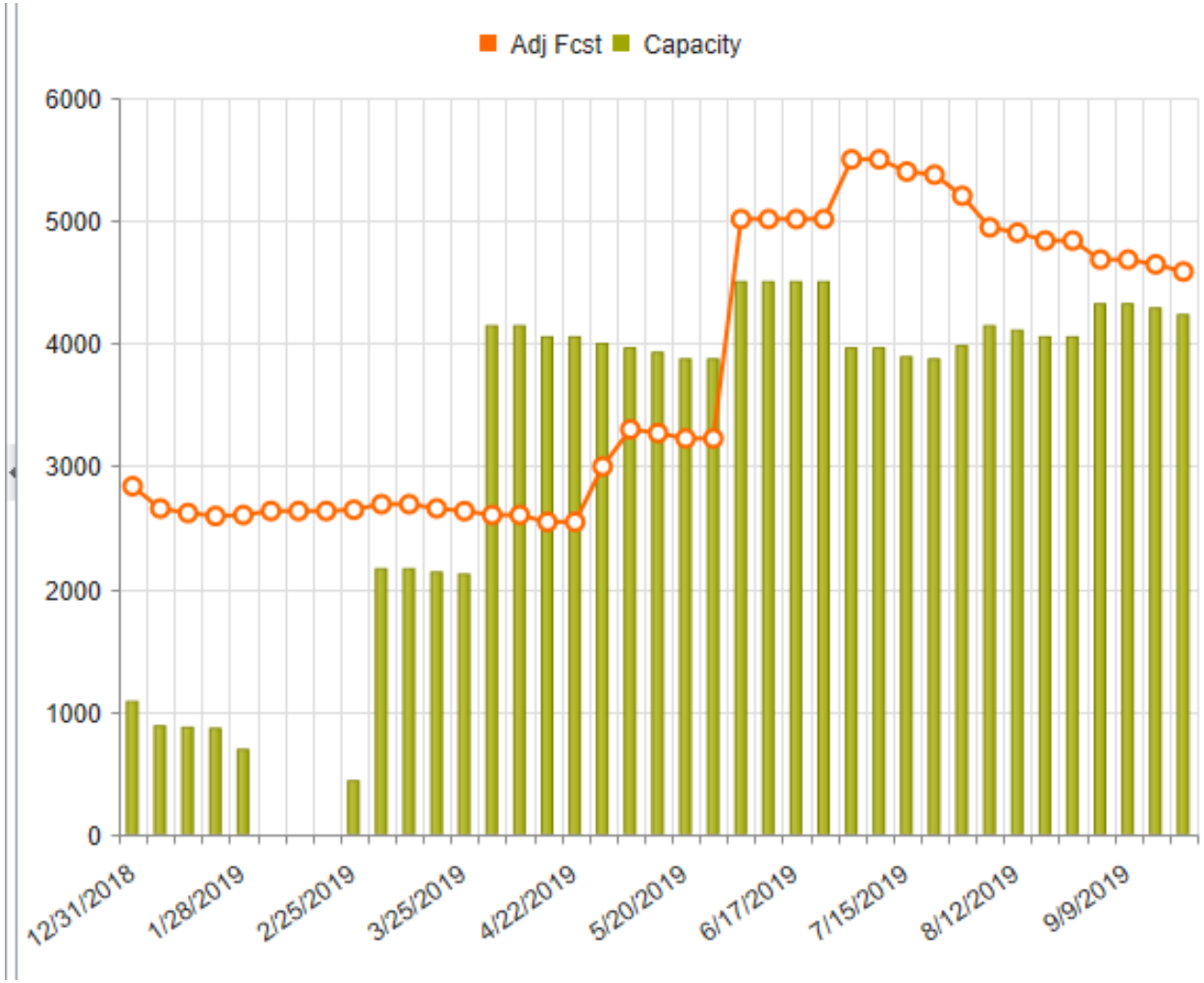
- Every business that we've ever worked with exhibits some degree of seasonality in their sales

Level Sourcing Capacity



- No matter how well you can predict the seasonality of your sales, one planning challenge is that most businesses have fairly “flat” production (or sourcing) capabilities
- Goal is to have enough inventory to handle the peaks, yet not too much at the end of the season

Weekly Planning Challenge

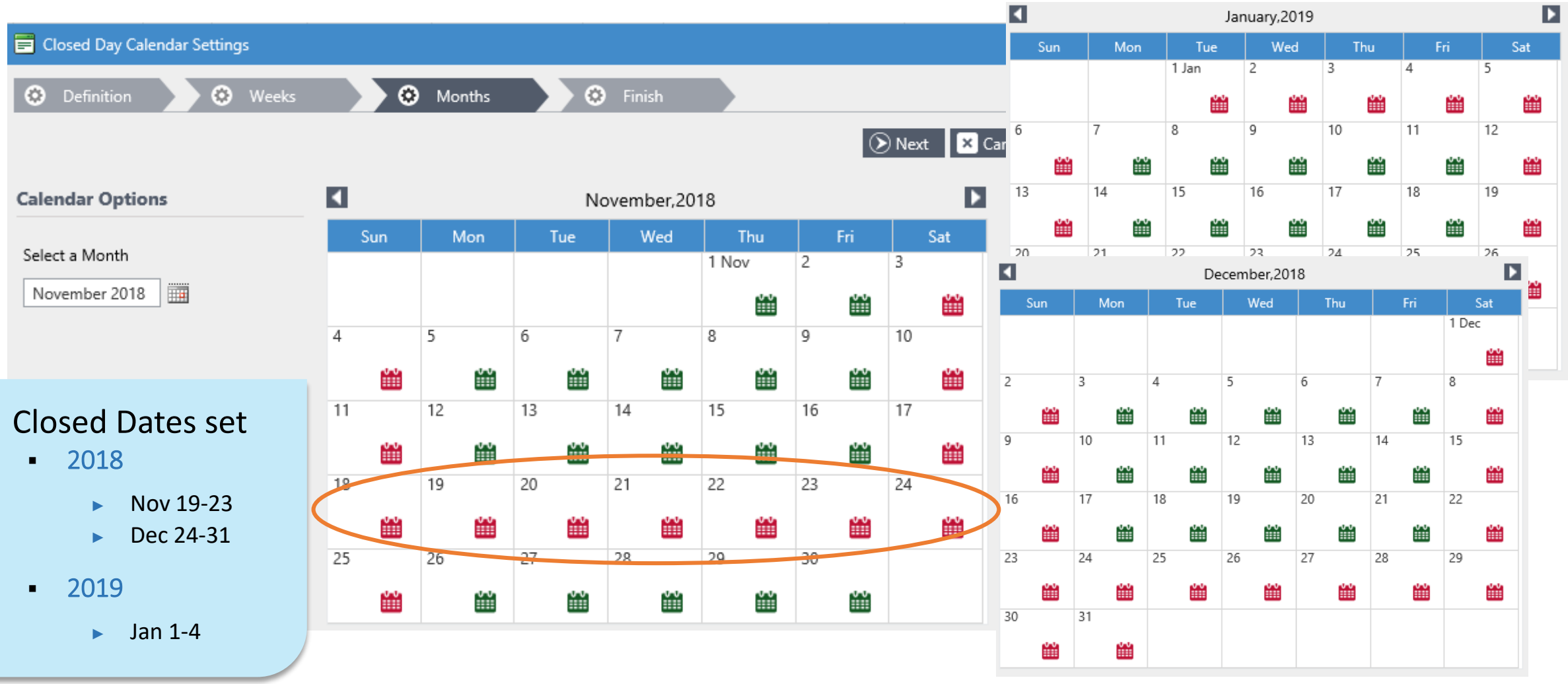


- Now, looking at this at a more granular, weekly level, with supplier and plant shutdowns factored in, the challenge of planning our products and raw materials is magnified

Week 11/19 will be Closed for Receiving

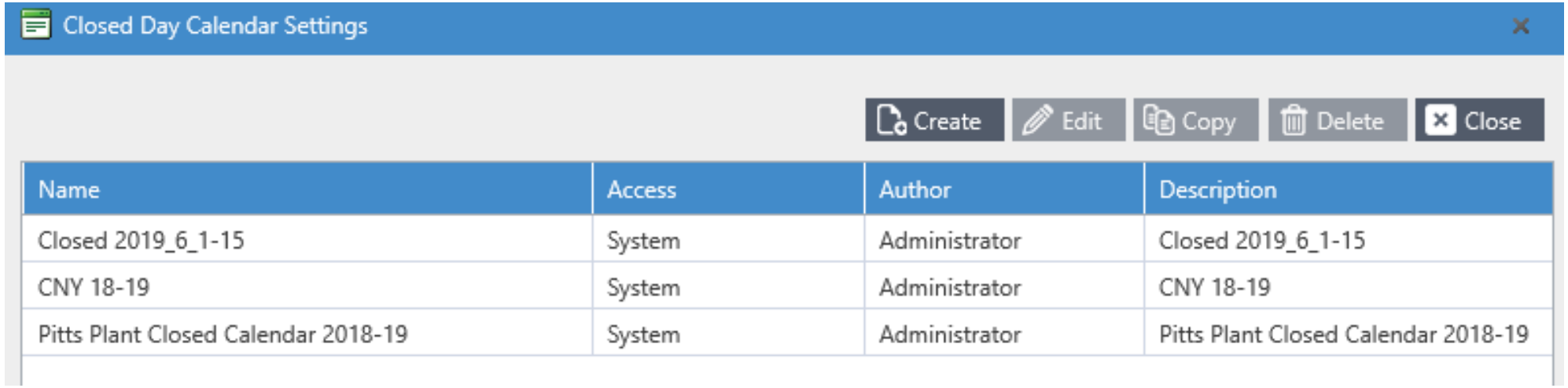
	10/29/2018	11/5/2018	11/12/2018	11/19/2018	11/26/2018	12/3/2018	12/10/2018
AdjFcst	3,749	3,940	3,906	3,855	3,855	3,640	3,640
CustOrders	0	0	4,500	0	0	0	0
Gross Req	3,749	3,940	4,500	3,855	3,855	3,640	3,640
SchReceipts	0	0	0	0	0	0	0
PlnReceipts	3,900	3,852	4,416	3,636	3,636	3,600	3,444
PlnOrders	4,416	3,636	3,636	3,600	3,444	3,192	2,652
Safety Time	2.17	2.17	2.17	2.17	2.17	2.17	2.17
DEI	8,482	8,397	8,310	8,095	7,875	7,837	7,641
PEI	18,494	18,406	18,322	18,103	17,884	17,845	17,649

DSX Closed Day Calendars Can be Created



- Closed Dates set
  - 2018
    - Nov 19-23
    - Dec 24-31
  - 2019
    - Jan 1-4

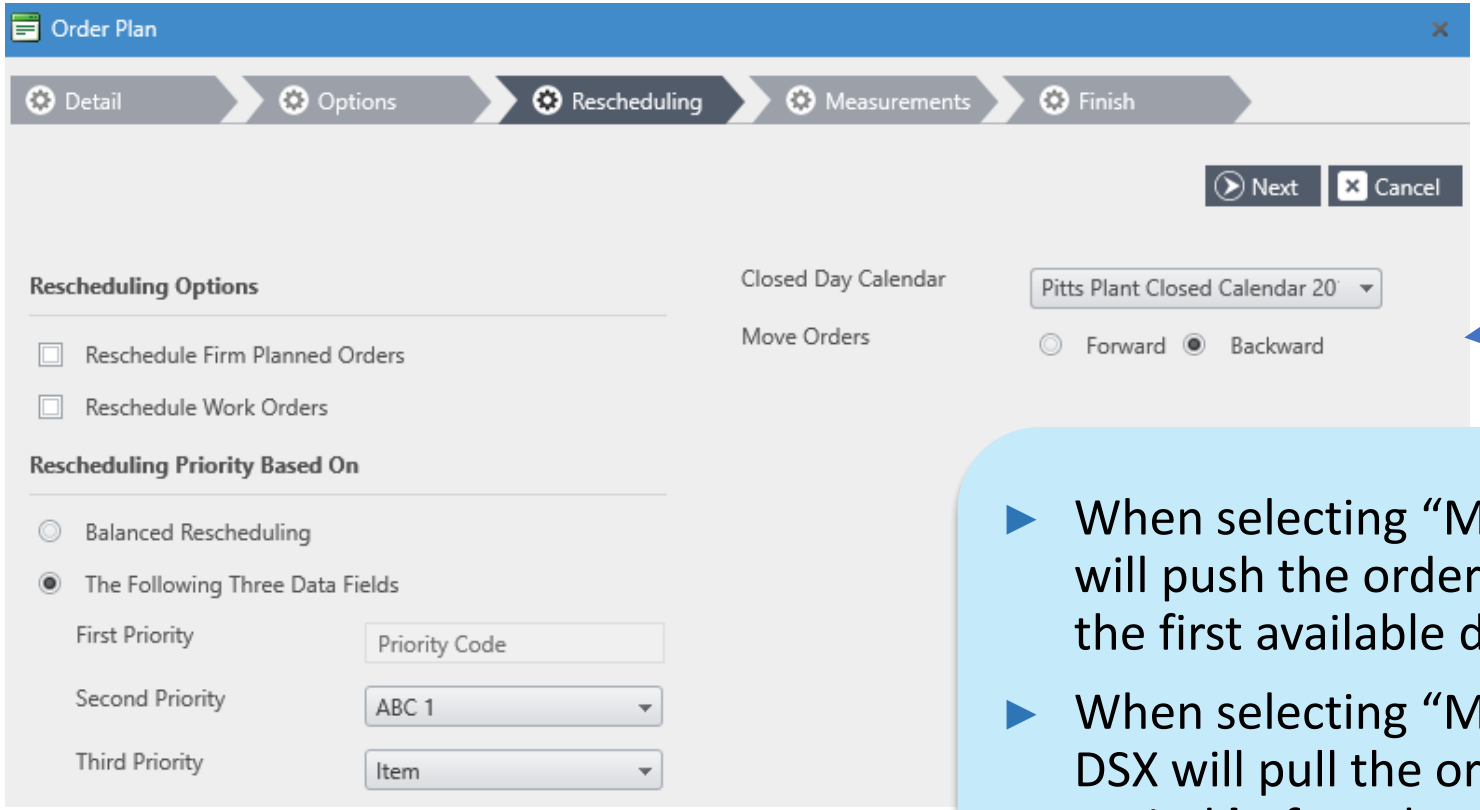
Multiple Closed Day Calendars May Exist

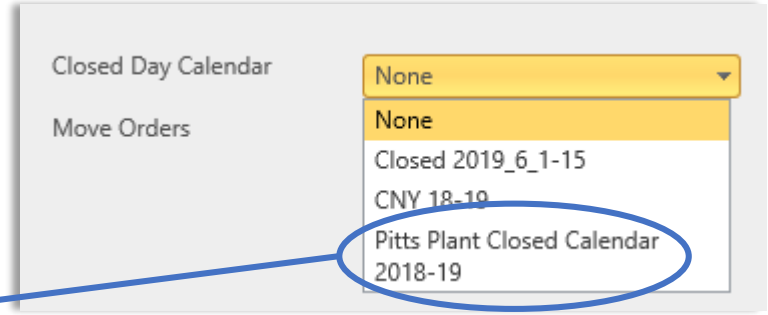


- Different Closed Day calendars can be setup and selected in the Order Plan, depending upon the planned event & associated resource
- Or a universal calendar could be applied to all planned records

Rescheduling: Select the Closed Day Calendar in Order Plan

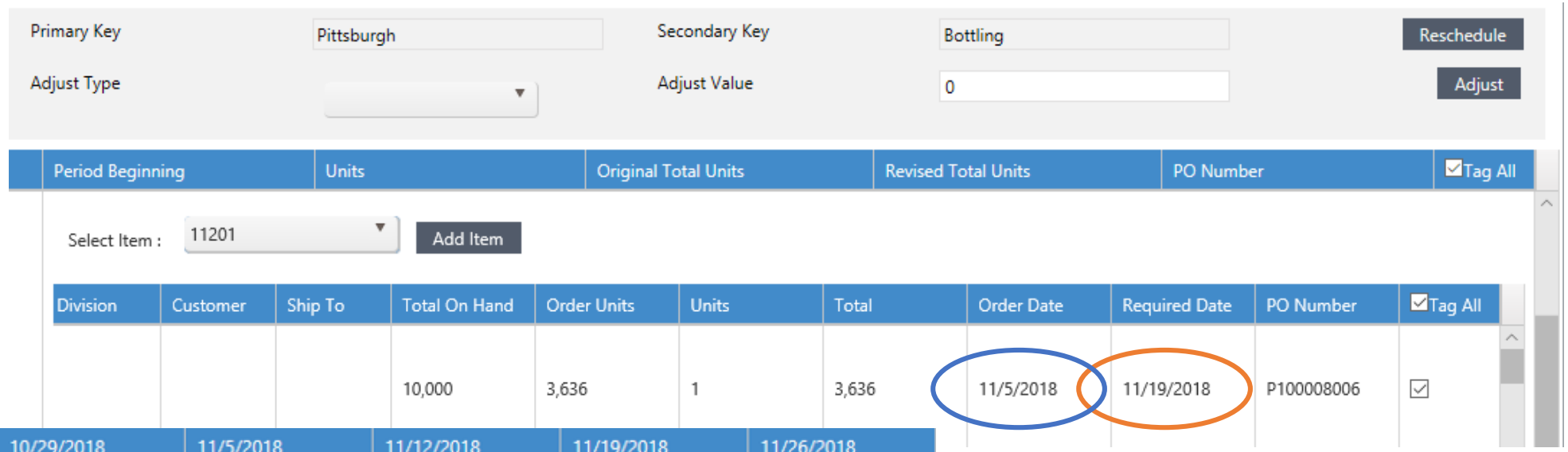
- Closed Day Calendars are used only in the Order Plan and do NOT replace the System calendars





- When selecting “Move Orders **Forward**,” DSX will push the orders from the closed days to the first available date in the **future**.
- When selecting “Move Orders **Backward**,” DSX will pull the orders into the first available period **before** the closed days.

Create>Review Order Plan Detail (Before Rescheduling)



	10/29/2018	11/5/2018	11/12/2018	11/19/2018	11/26/2018
AdjFcst	3,749	3,940	3,906	3,855	3,855
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DEI	8,482	8,397	8,310	8,095	7,875
PEI	18,494	18,406	18,322	18,103	17,884
Approved Orders	0	0	0	0	0

In this case, we're looking at the summarized Planned Orders for the Vendor: **PITTSBURGH**– Item: **11201**

Drill into the Order Plan Details for a specific period, in this case, click on the week of 11/5/2018.

<u>Remember</u>: Week 11/19/2018 is within the Closed Day Calendar

After Rescheduling Order Plan

Period Beginning	Units	Original Total Units	Revised Total Units	PO Number	Tag All

Select Item : 11201 Add Item

Division	Customer	Ship To	Total On Hand	Order Units	Units	Total	Order Date	Required Date	PO Number	Tag All
			10,000	3,636	1	3,636	11/2/2018	11/16/2018	P100008006	☑

	10/29/2018	11/5/2018	11/12/2018	11/19/2018	11/26/2018
AdjFcst	3,749	3,940	3,906	3,855	3,855
CustOrders	0	0	4,500	0	0
Gross Req	3,749	3,940	4,500	3,855	3,855
SchReceipts	0	0	0	0	0
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PEI	18,494	18,406	18,322	18,103	17,884
Approved Orders	0	0	0	0	0

After rescheduling, the detail reflect the updated Order Date and Due Date.

The Order Date is now 11/2/2018 & the PO's Required Date is now 11/16/2018, prior to the closed week because we have selected to Move the Orders Backward (not forward) within the Order Plan setting.

Remember the data on the record's spreadsheet panel will ***not*** change. However, the order plan output is updated.

Results in the Order Plan Output

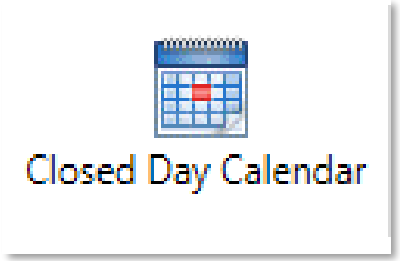
Vendor	ShipTo	RequiredDate	Item	OrderQty	PONumber
Pittsburgh		2018-12-03 00:00:00.000	Global|RP|11201	3600.0000000	P100008008
Pittsburgh		2018-12-10 00:00:00.000	Global|RP|11201	3444.0000000	P100008009
Pittsburgh		2018-12-17 00:00:00.000	Global|RP|11201	3192.0000000	P100008010
Pittsburgh		2018-12-21 00:00:00.000	Global|RP|11201	2652.0000000	P100008011
Pittsburgh		2018-12-21 00:00:00.000	Global|RP|11201	2772.0000000	P100008012
Pittsburgh		2018-10-15 00:00:00.000	Global|RP|11201	12024.0000000	P100008001
Pittsburgh		2018-10-22 00:00:00.000	Global|RP|11201	3936.0000000	P100008002
Pittsburgh		2018-10-29 00:00:00.000	Global|RP|11201	3900.0000000	P100008003
Pittsburgh		2018-11-05 00:00:00.000	Global|RP|11201	3852.0000000	P100008004
Pittsburgh		2018-11-12 00:00:00.000	Global|RP|11201	4416.0000000	P100008005
Pittsburgh		2018-11-16 00:00:00.000	Global|RP|11201	3636.0000000	P100008006

Although the results are not visible on the spreadsheet panel, the proper Order Quantity & Required Data of the PO is delivered in the Order Plan output file

Create Closed Day Calendar

- Closed Day Calendars are used only in the Order Plan and do NOT replace the System calendars
  - Different Closed Day calendars can be setup and selected in the Order Plan
  - Or a universal calendar could be applied to all planned records

- To create a Closed Day Calendar, select:
  - Admin tab
  - Closed Day Calendar icon
  - Click Create



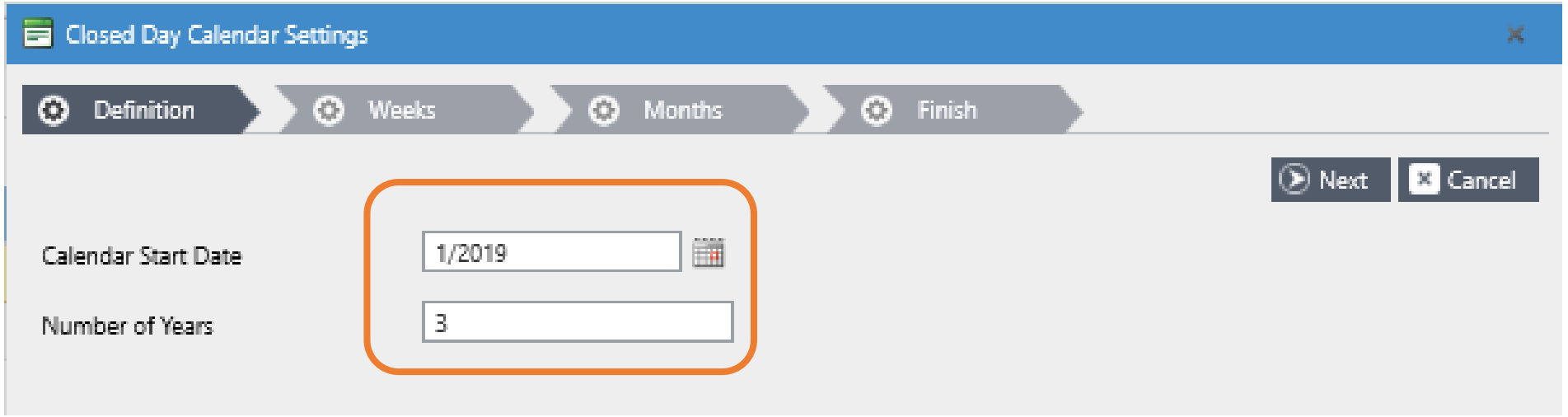
Closed Day Calendar Settings

Create | Edit | Copy | Delete | Close

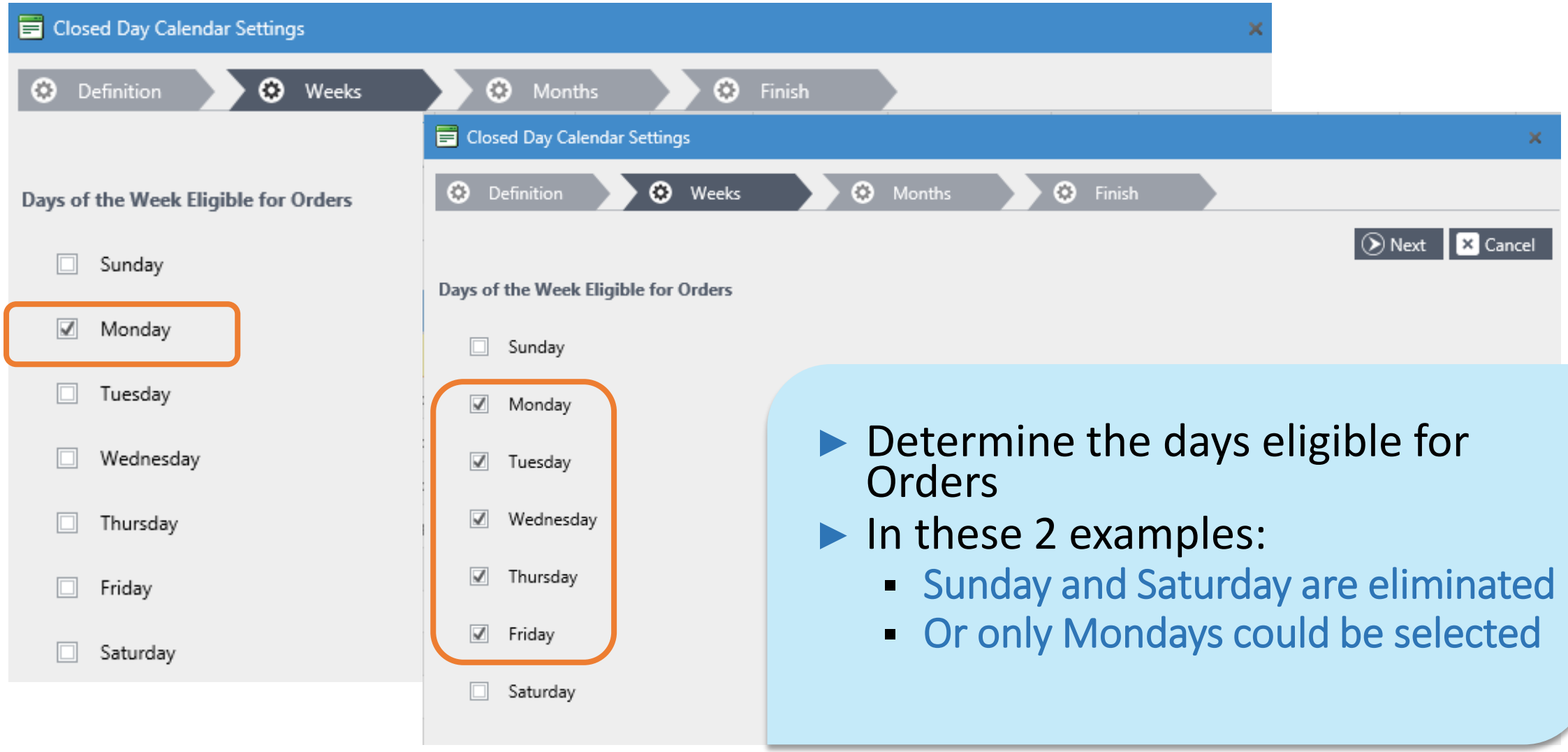
Name	Access	Author	Description
2019_6_1-15_Closed	System	Administrator	2019_6_1-15_Closed
CNY 18-19	System	Administrator	CNY 18-19
Pitts Plant Closed Calendar 2018-19	System	Administrator	Pitts Plant Closed Calendar 2018-19

Definition: Set Horizon

- Select a Calendar Start Date
- Enter the Number of Years of the calendar's horizon
- Click Next

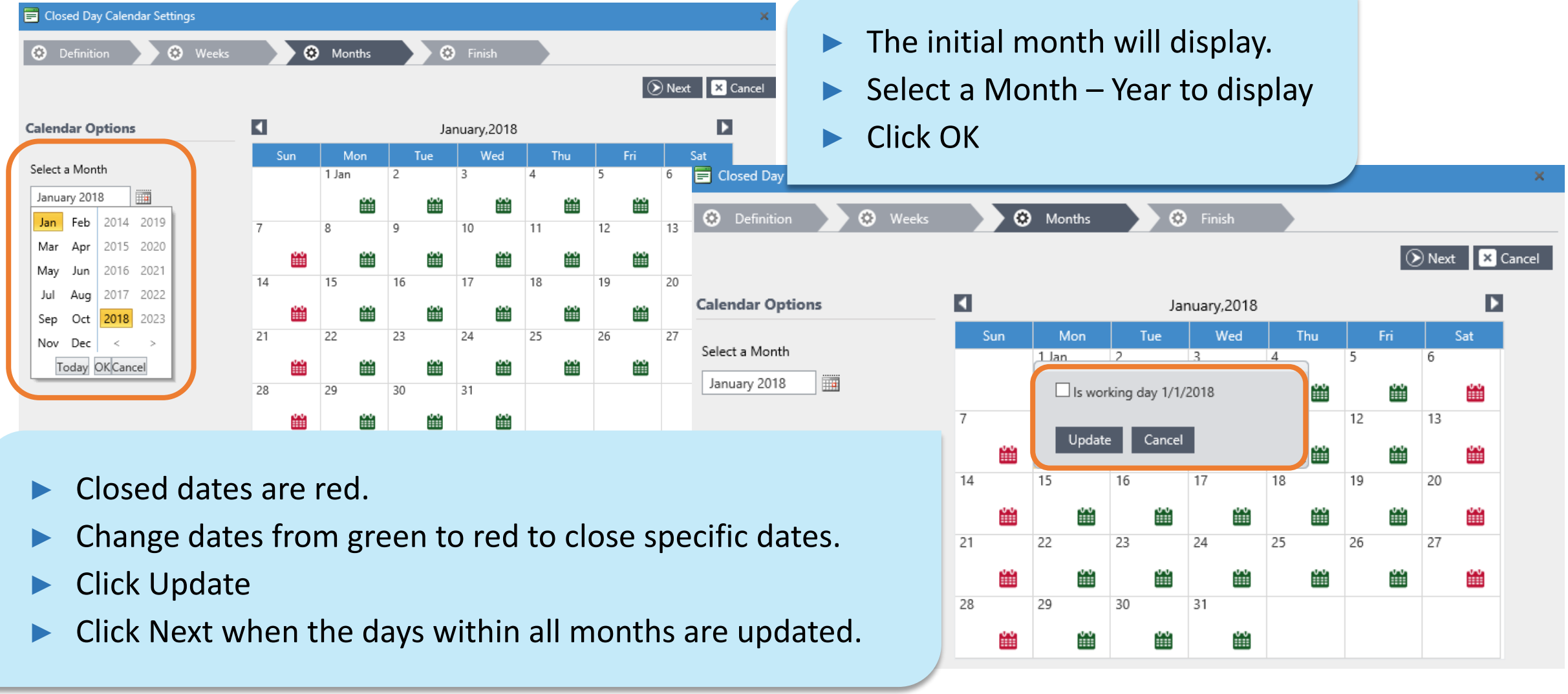


Weeks: Determine Days



- Determine the days eligible for Orders
- In these 2 examples:
  - Sunday and Saturday are eliminated
  - Or only Mondays could be selected

Months: Reflect the Weeks Setting

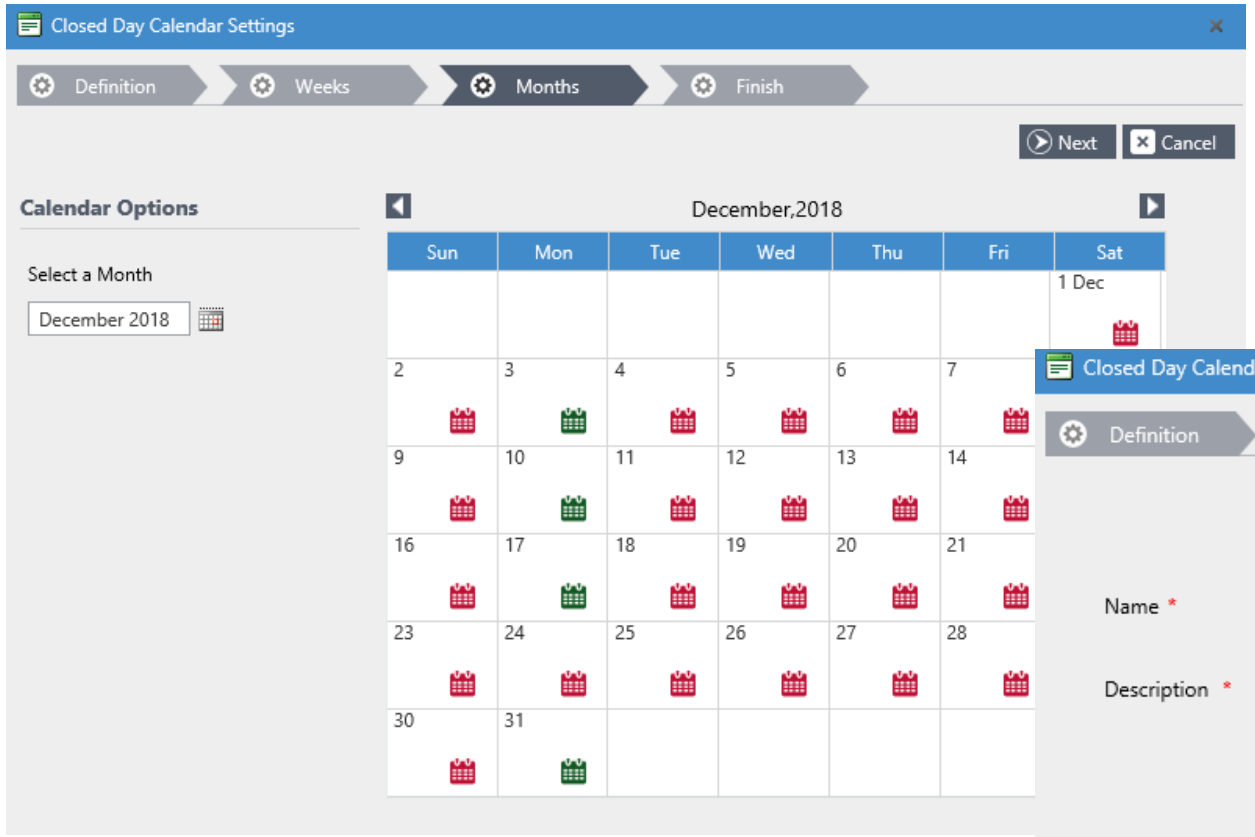


- The initial month will display.
- Select a Month – Year to display
- Click OK

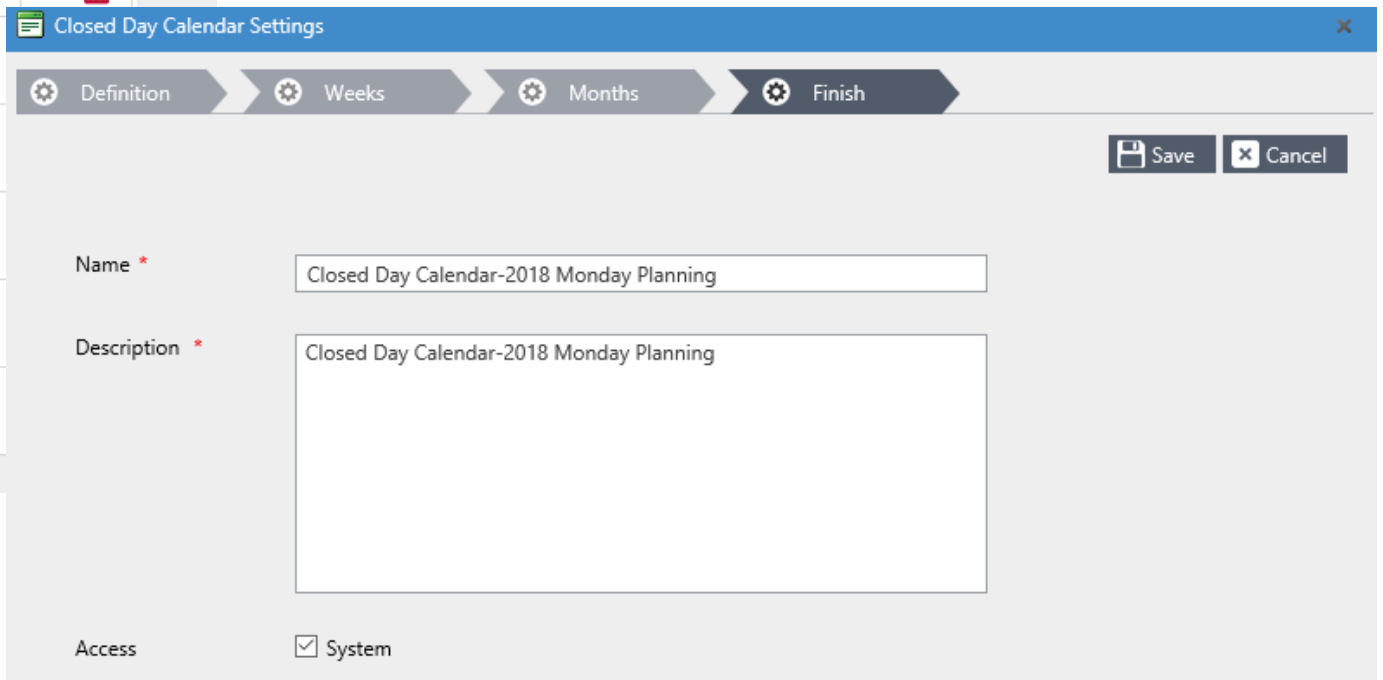
- Closed dates are red.
- Change dates from green to red to close specific dates.
- Click Update
- Click Next when the days within all months are updated.

Multiple Future Months are Set

Finish & Name Closed Day Calendar

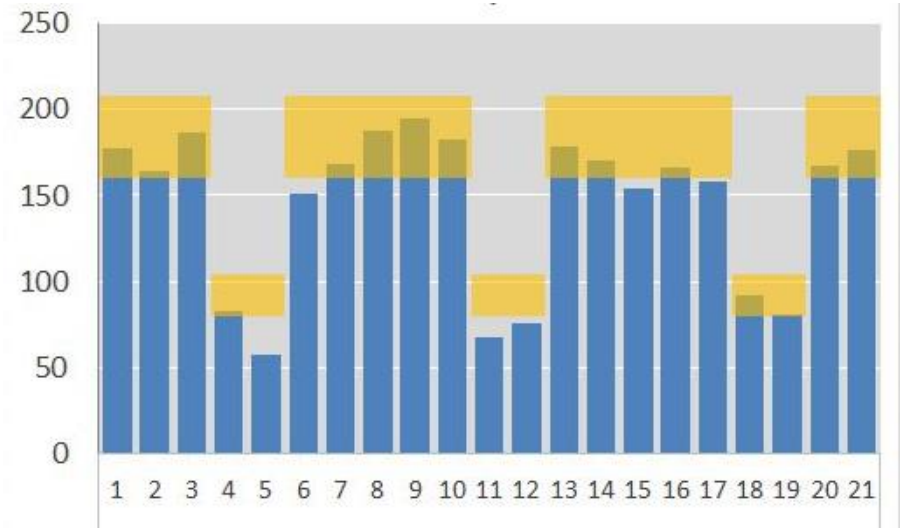


- Name
- Set Access to System
- Save when finished



Optimizing Inventory – Supply Chain

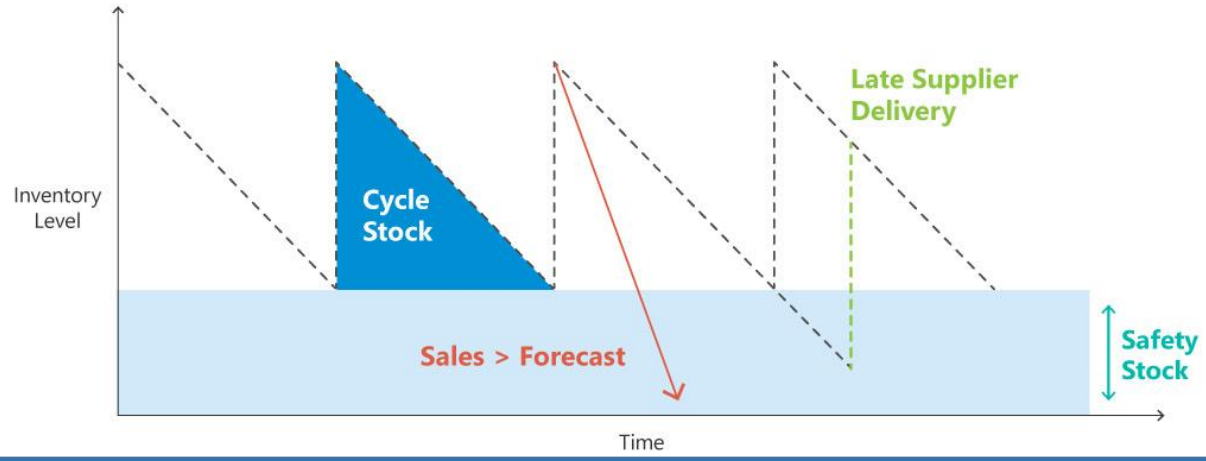
- Use of closed day calendars is just one of the tools in your DSX toolbox
- Keep in mind that moving requirements forward or backward may result in a sudden surge in inventory.



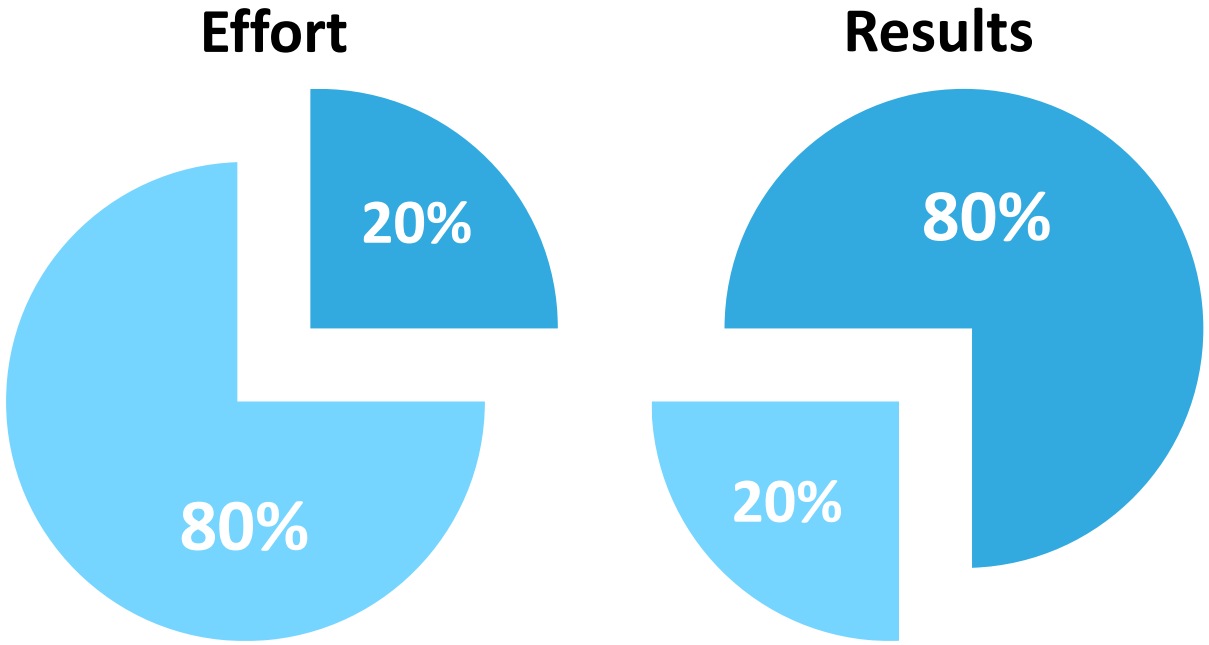
- If capacity is a concern, gradually increasing inventory, in the right locations, prior to the interruption, then decreasing inventory after the event, will enable a collaboration of all members of the supply chain

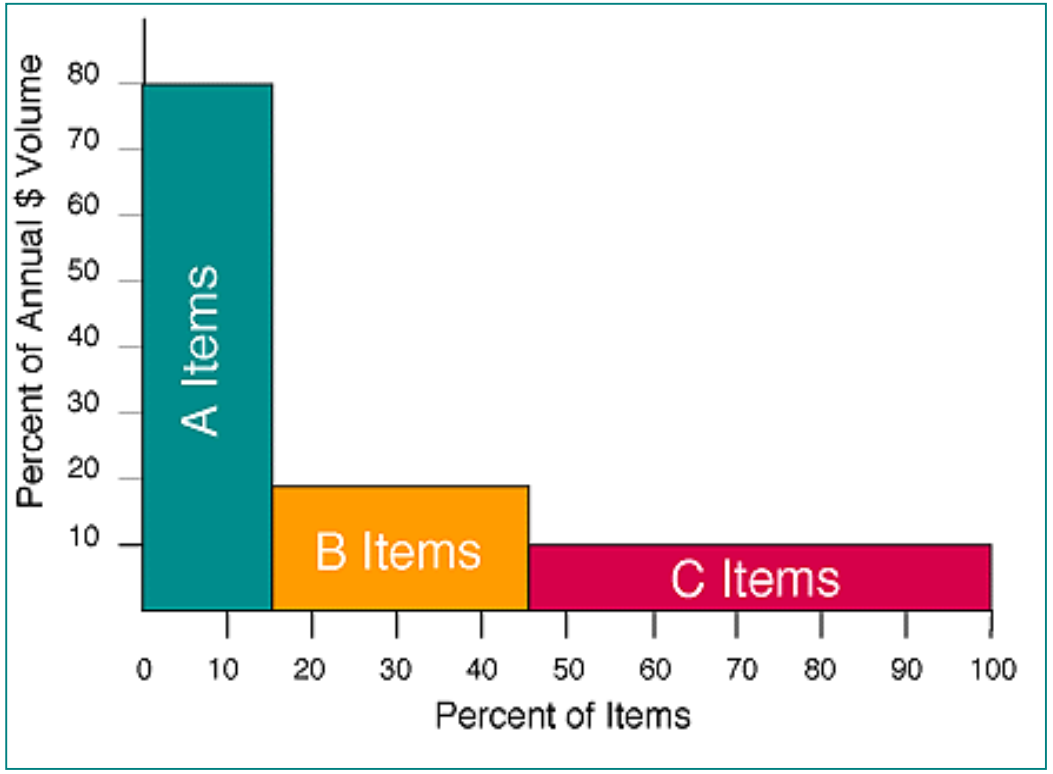
Safety Stock-Safety Time

- Safety Stock is a quantity of inventory which serves as a buffer to cover unplanned demand
  - Strategically, an item that is more forecastable requires less safety stock than an item which is less forecastable
- DSX offers an option to use Safety Time as well as Safety Stock
- Use of Safety Time allows DSX customers to stay ahead of seasonal changes
- As demand increases, safety time automatically triggers an increase in onhand inventory
  - A 2 week safety time as we approach peak season, will deliver an increase of inventory when required, while the same 2 week safety time at the end of the season, will deliver a decrease of inventory



Use Pareto's Law & DSX's ABC Ranking





DSX analysis tools enables standards to be set based on the business requirements

Normal Operations Safety Time

- Best practice standards drive the assignment of Safety Time based on priority
- More forecastable “A” items are assigned a shorter Safety Time value
  - A records result in more frequent inventory turns
- B & C records are less forecastable and are assigned longer Safety Times or higher Safety Stocks
  - C and/or D records may be designated as Make to Order vs Make to Stock

DSX’s ABC Analysis & Global Changes can make these assignments to reduce inventory and improve service

Results of Safety Time Variations

- Ramping up of Safety Time, before the season, increases inventory
- Better prepared for seasonal, unplanned demand

	10/8/2018	10/15/2018	10/22/2018	10/29/2018	11/5/2018	11/12/2018	11/19/2018	11/26/2018	12/3/2018	12/10/2018
AdjFcst	1,487	1,460	1,453	1,424	1,379	1,367	1,349	1,349	1,318	1,318
CustOrders	0	3,600	0	0	3,600	0	0	0	4,800	0
Gross Req	1,487	3,600	1,453	1,424	3,600	1,367	1,349	1,349	4,800	1,318
SchReceipts	0	0	0	0	0	0	0	0	0	0
PlnReceipts	0	9,684	1,380	1,368	5,016	1,320	1,308	1,308	8,568	1,716
PlnOrders	1,380	1,368	5,016	1,320	1,308	1,308	8,568	1,716	1,704	1,692
Safety Time	2.17	2.17	2.17	2.17	3.25	3.25	3.25	3.25	5.41	5.41
DEI	3,148	3,104	3,029	2,969	4,392	4,342	4,308	4,261	8,024	8,422
PEI	-574	5,510	5,437	5,381	6,797	6,750	6,709	6,667	10,435	10,834

What if Safety Time allows the Inventory to fall below Safety Stock Quantities?

Greater of Safety Stock & Safety Time

- DSX can also be set to observe the Greater of Safety Stock or Safety Time for customers that have traditionally relied on Safety Stock values

	10/8/2018	10/15/2018	10/22/2018	10/29/2018	11/5/2018	11/12/2018	11/19/2018	11/26/2018	12/3/2018	12/10/2018	12/17/2
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CustOrders	0	3,600	0	0	3,600	0	0	0	4,800	0	
Gross Req	1,487	3,600	1,453	1,424	3,600	1,367	1,349	1,349	4,800	1,318	
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DEI	3,148	3,104	3,029	3,000	4,392	4,342					
PEI	-574	5,510	5,437	5,405	6,797	6,750					

Planning Data | Item Master

Current Safety Time 0.50

Current Safety Stock 3,000.00

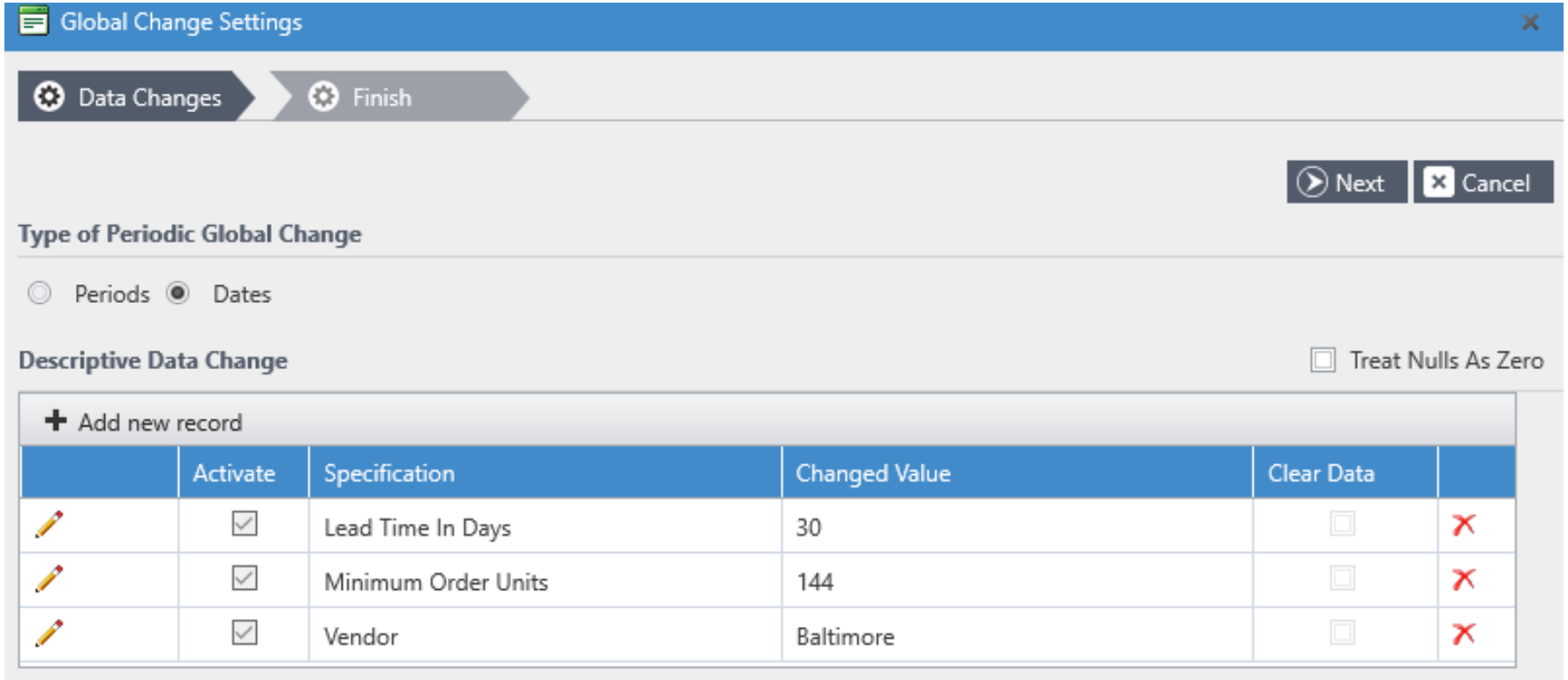
Safety Stock / Safety Time Usage Indicator	Options:
	Safety Stock Only
	Safety Time Only
	Safety Stock + Safety Time
	Greater (of SS or ST)
	Lesser (of SS or ST)

Temporary Vendor Change

- Many of our apparel customers that source from Asia temporarily use domestic sourcing, when necessary:
  - Excessive unplanned demand or new business
  - Labor disputes
- These vendors may be more expensive, but not as costly as lost sales or a decrease in service levels
- Consider other planning data such as lead times and plan minimums when alternate sources are used

DSX Global Changes

- By temporarily changing the Vendor in DSX, the Order Plan will reflect the domestic vendor



Historical Seasonality Sometimes Doesn't Fit

- Seasonality is generally evident
  - More ice cream is sold in the summer & cold medicine spikes in the winter
- Be aware, sometimes seasons change
  - Some holidays and events which effect seasonality shift from year to year
    - Thanksgiving, Lent, tradeshows or promotions
- Look ahead & re-seasonalize the forecast to best reflect future demand

If the seasonal patterns that shape your history will shift in the future, be sure to appropriately shift the seasonal spread of your forecasts.

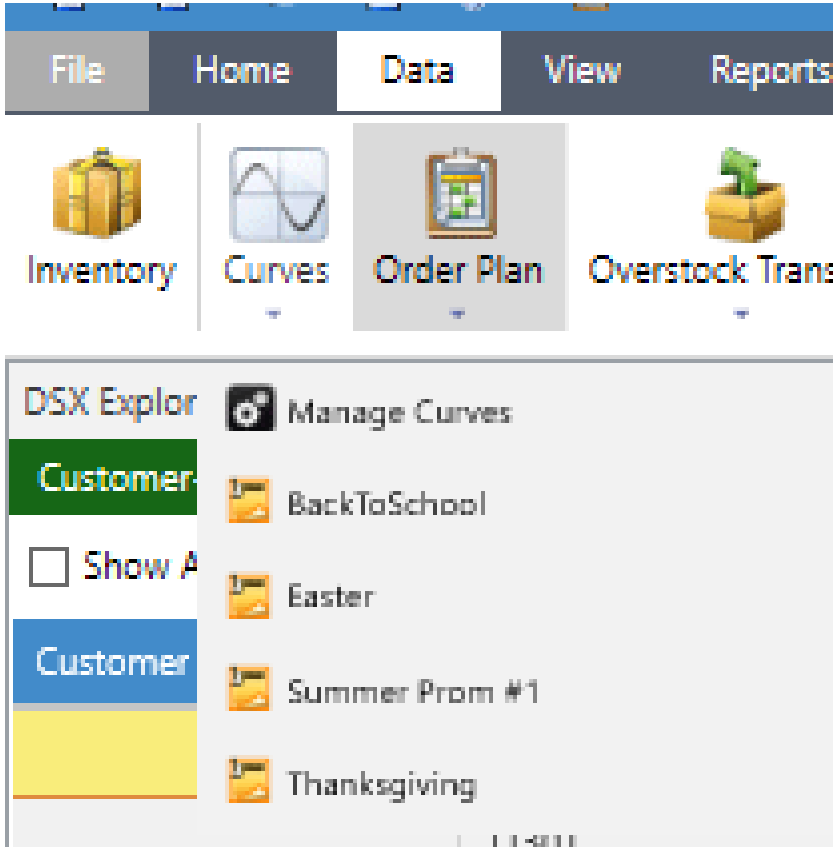
Forecast Spread with Curve

- A curve can change the forecast for an item and force the desired seasonality
- An item that will now only be available 5 months of the year

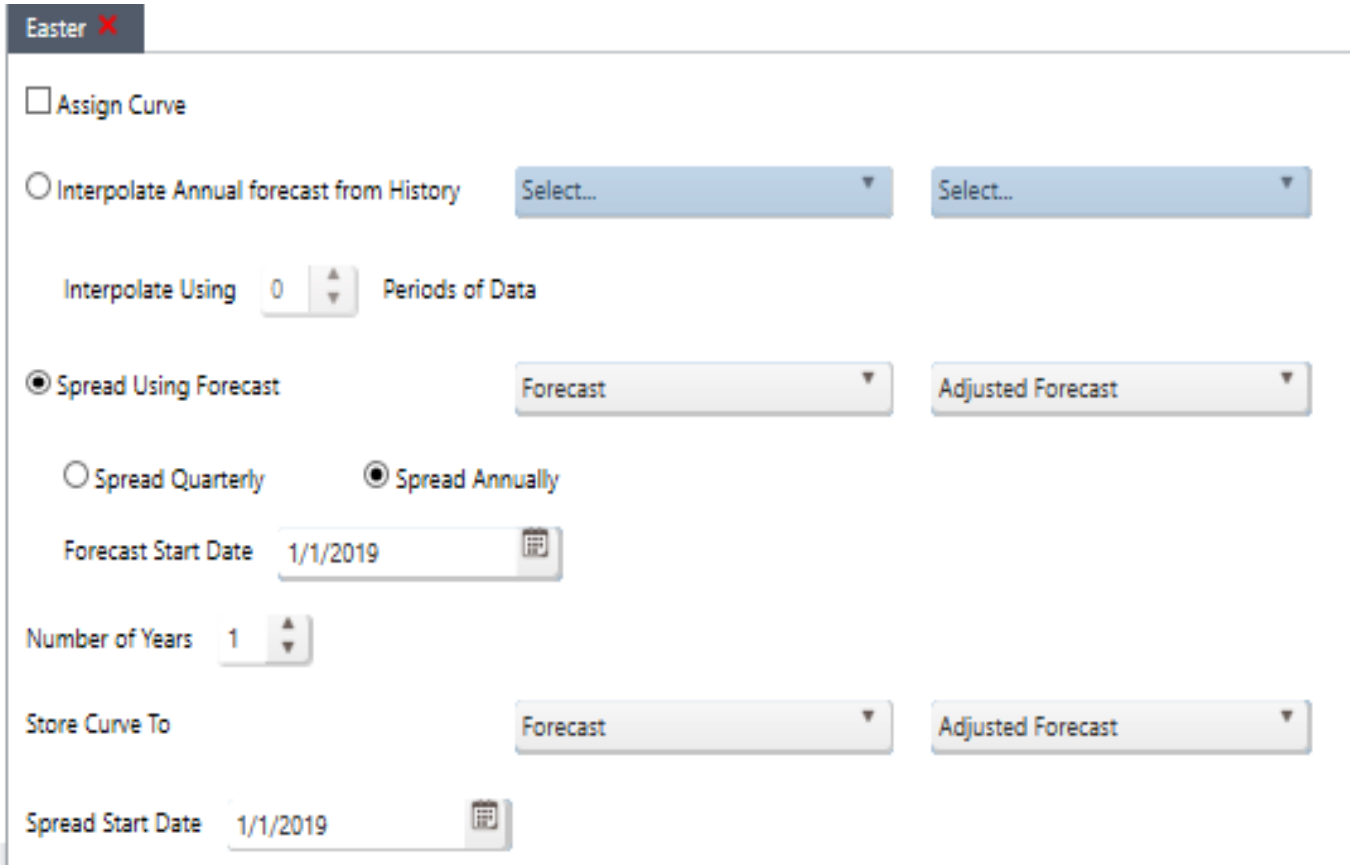
	2019 AdjFcst	Curve '19
January	11,024	20,750
February	10,304	27,666
March	13,255	34,583
April	8,183	41,500
May	8,594	0
June	17,806	0
July	12,219	0
August	10,969	0
September	11,396	0
October	15,048	0
November	12,633	0
December	6,901	13,833
Total	**138,332**	**138,332**
Average	**11,528**	**11,528**

Force Seasonality: Curve Assignment

- Assignment of a curve to records may be executed via Global Changes or Manually
- Manual: Select the appropriate Curve from the list of curves created
- Global Changes/Batchbuilder:



Manual: Select the Curve Assignment Settings



Spread

	Percent
1	15.00 %
2	20.00 %
3	25.00 %
4	30.00 %
5	0.00 %
6	0.00 %
7	0.00 %
8	0.00 %
9	0.00 %
10	0.00 %
11	0.00 %
12	10.00 %

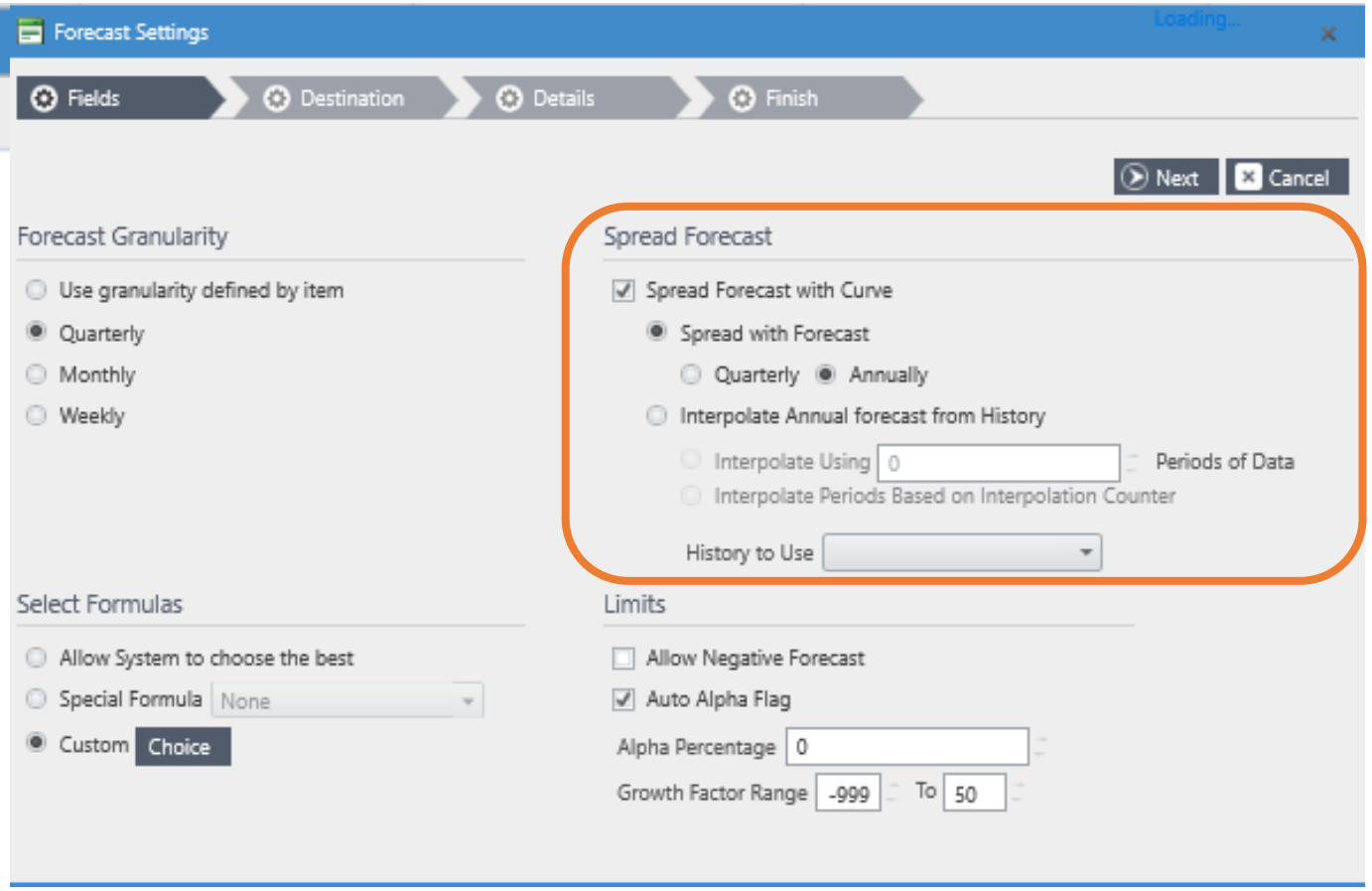
Testing the curve spread may be done prior to mass deployment through global changes or batching the process

Global Change & Forecast Setting

- Assign the Curves via Global Changes

- Automate by adding to batch job

- Edit Forecast Setting to insure Curves are selected

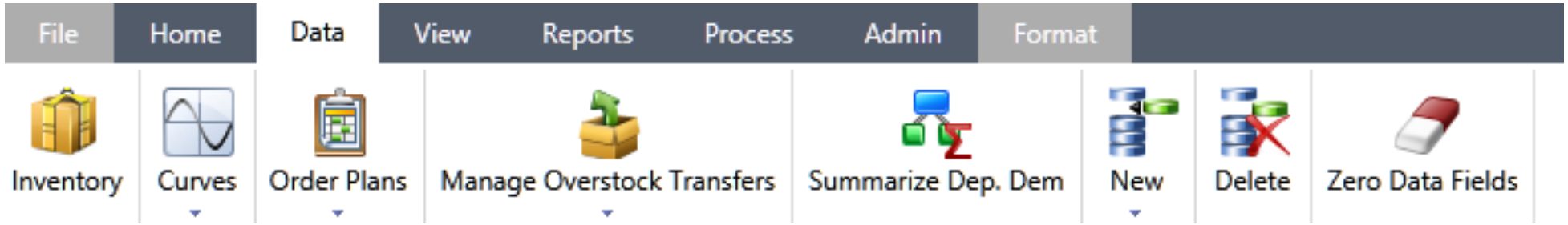


Results of Deployment: Adjusted Forecast Spread with Curve

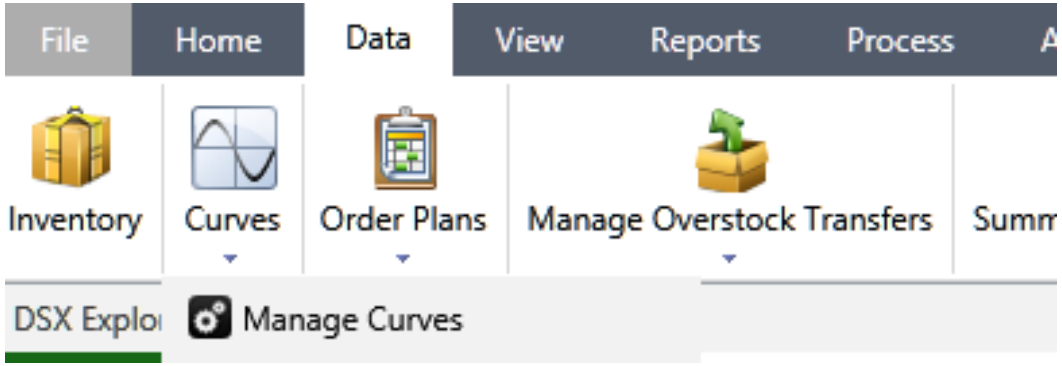
- Forecast is now spread based on the assigned Curve percentages…

	2019 AdjFcst	Percent
January	20,750	15.00 %
February	27,666	20.00 %
March	34,583	25.00 %
April	41,500	30.00 %
May	0	0.00 %
June	0	0.00 %
July	0	0.00 %
August	0	0.00 %
September	0	0.00 %
October	0	0.00 %
November	0	0.00 %
December	13,833	10.00 %
Total	138,332	
Average	11,528	

Create New Curve



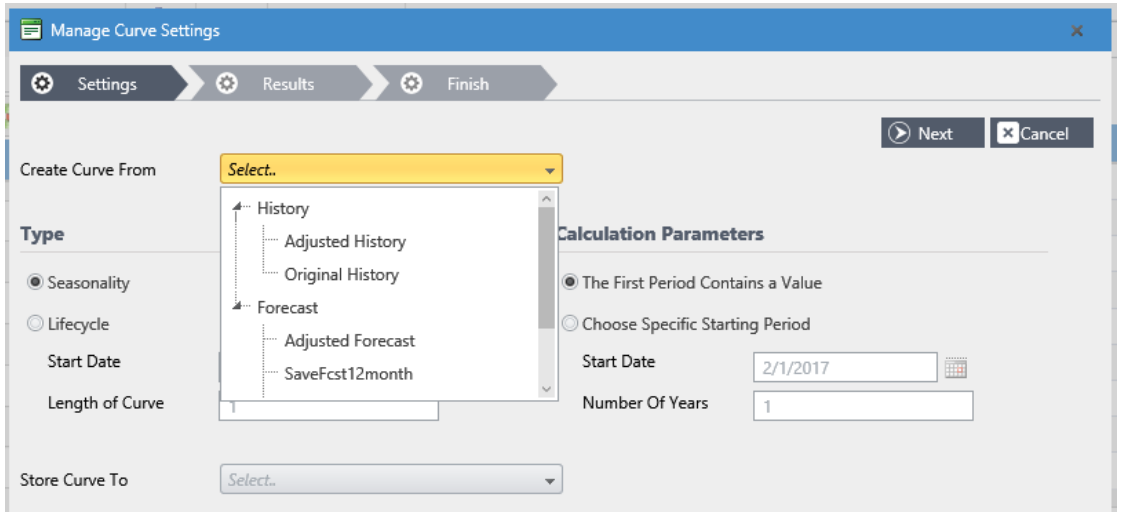
- From the Data tab, use the drop-down below the Curves icon
- Select Manage Curves



Choose Data to Base Curve

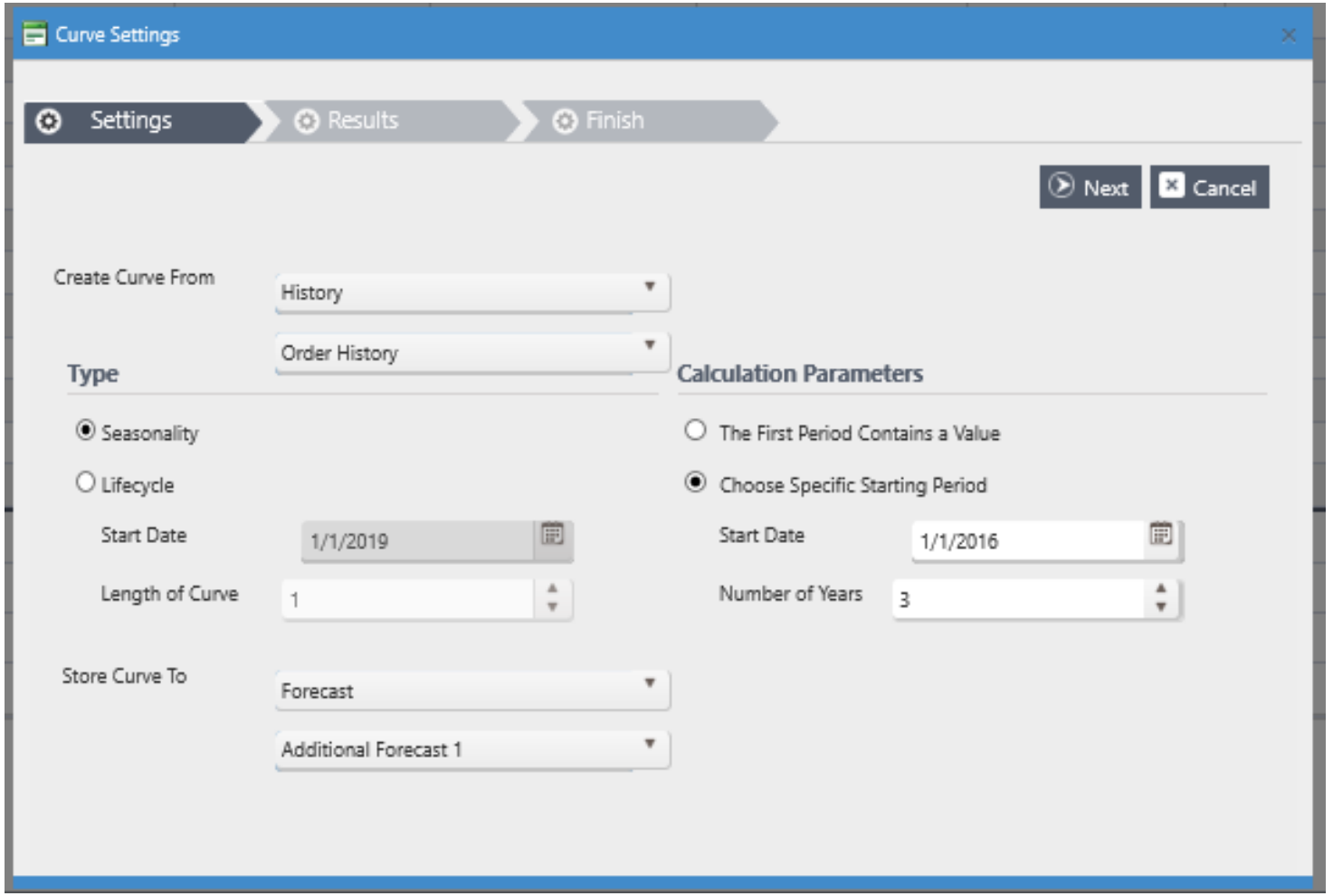
- Click the Create button

- Select the data to create the curve from, such as Original History or Adjusted History or a forecast stream



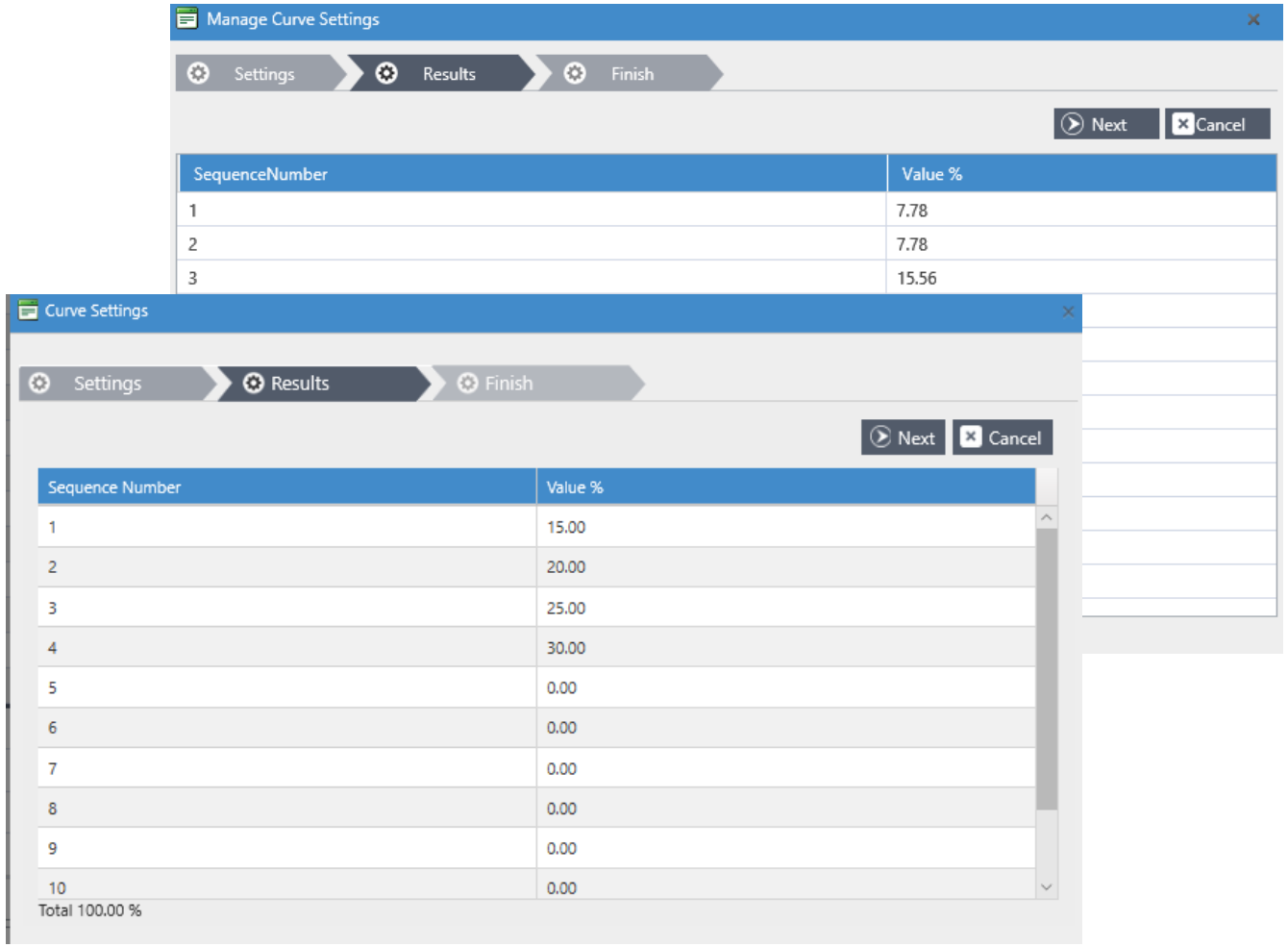
Curve Setting: Type & Calculation

- Choose Seasonality or Lifecycle
- Select the Start Date of the Curve and Length of Curve
- Select the data to use in the Calculation of the curve spread
- Store Curve to…Adjusted Forecast



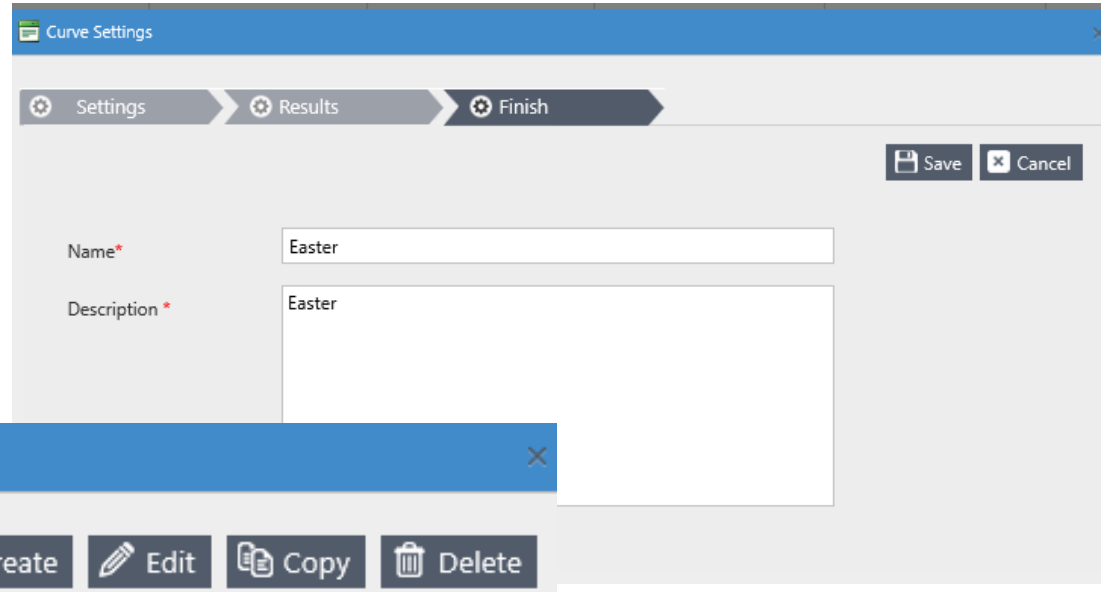
Review Curve Percentage

- Results display the percentage spread based on the period selected
  - Month 1=January
- User may edit the percentages if season or event has shifted
- Some user create their own curves



Create a Library of Curves to Choose From

- Finish by naming the curve
- REMEMBER, these curves are created but now they must be assigned



Curve Settings

Create | Edit | Copy | Delete

Name	Author	Access	Description
BackToSchool	Administrator	System	BackToSchool
Easter	Administrator	System	Easter
Summer Promo #1	Administrator	System	Summer Promo #1
Thanksgiving	Administrator	System	Thanksgiving

Force Seasonality for New Records

- New records' flat forecasts can also be seasonalized by applying a curve
- Item to be promoted only May – August (Summer Promo #1)

	2019 SysFcst	2019 AdjFcst	2020 AdjFcst	2019 AdjFcst	2020 AdjFcst	Percent
October	1,000	1,000	1,000	0	0	0.00 %
November	1,000	1,000	1,000	0	0	0.00 %
December	1,000	1,000	1,000	0	0	0.00 %
January	1,000	1,000	1,000	0	0	0.00 %
February	1,000	1,000	1,000	0	0	0.00 %
March	1,000	1,000	1,000	0	0	0.00 %
April	1,000	1,000	1,000	0	0	0.00 %
May	1,000	1,000	1,000	1,200	1,200	10.00 %
June	1,000	1,000	1,000	3,000	3,000	25.00 %
July	1,000	1,000	1,000	4,800	4,800	40.00 %
August	1,000	1,000	1,000	3,000	3,000	25.00 %
September	1,000	1,000	1,000	0	0	0.00 %
	12,000	**12,000**	**12,000**	**12,000**	**12,000**	


QUESTIONS?


THANK YOU