OR Case Cart Implementation Study

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Agenda

- Project Overview
  - Project Focus
  - Project Objectives
  - Key Questions
- Model Inputs
- Demo
- Model Outputs
- Next Steps?
- Q&A

Project Overview

- Focus

Develop a simulation based modeling tool to test the impact of introducing a case cart system into the OR process when moving into the newly configured OR suite.

Project Overview

- Objectives
  - Ability to reliably predict the impact of existing and increased demands within the OR on case cart capacity
  - Evaluate impact of case cart number on OR throughput
  - Examine impact of customized case cart lifts as a potential bottleneck on utilization & identify bottlenecks
  - Determine Sterile Processing Dept. (SPD) resource requirements and their respective function on overall case cart utilization and OR utilization/throughput

Project Overview

- Objectives (cont.)
  - Predict optimal utilization strategies as case carts are introduced.
  - Identify bottleneck areas in the OR process with the introduction of case carts.
  - Examine the impact of future demand over a 5-10 year window with the ability to manipulate case cart number.
  - Ensure smooth work flow for patients and staff as case carts are introduced.

Project Overview

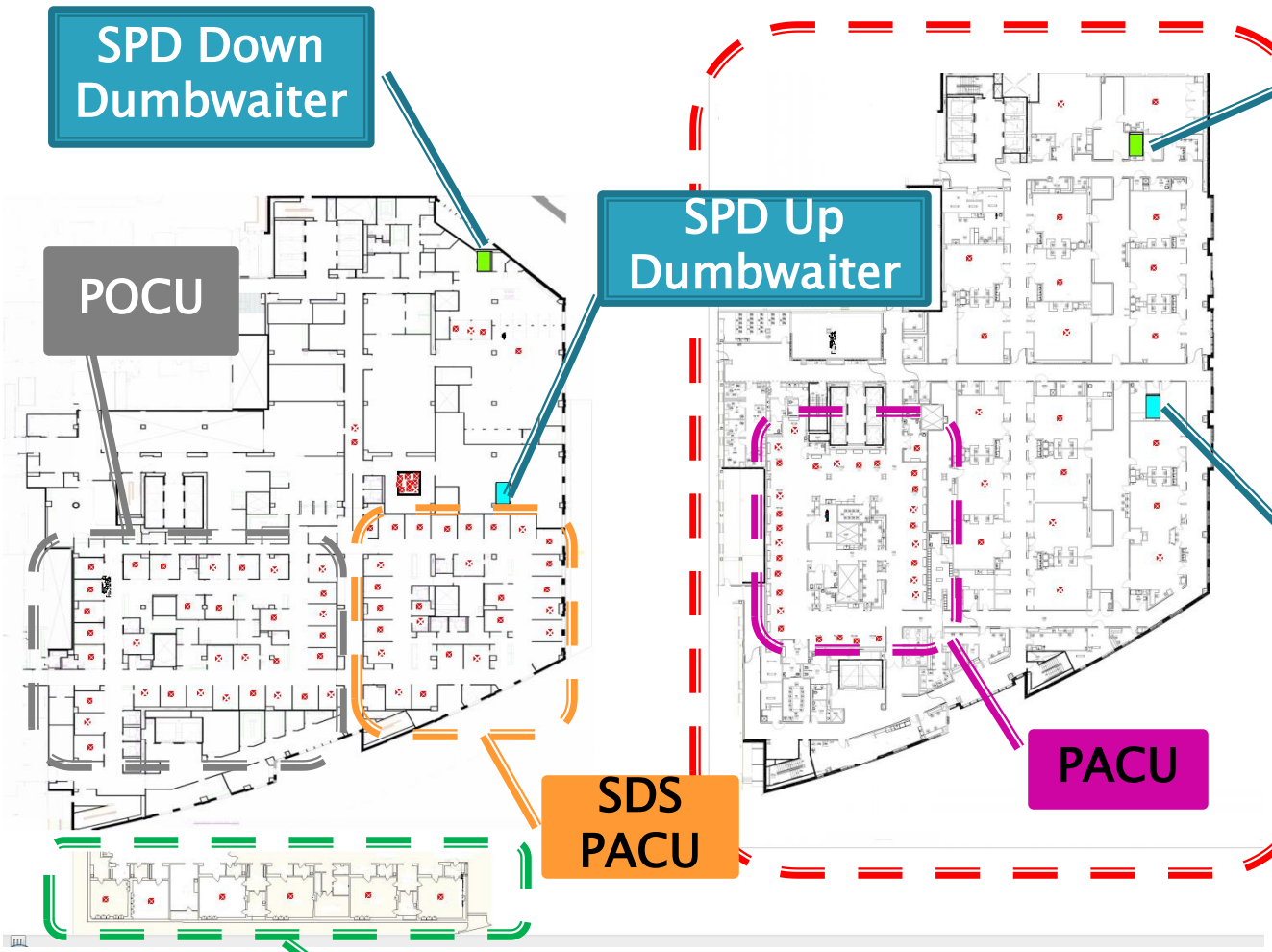
- Key Questions
  - Are there currently enough carts to satisfy the volume requirements?
  - Are there enough SPD FTEs to support the case cart process?
  - Will the case carts introduce any new delays in the patient process?
  - How many carts need to be staged prior to morning start to ensure smooth OR Suite flow?

Poll 1

Model Inputs

- Floor plan of existing basement POCU, SDS PACU, and SPD area
- Floor plan of new tower OR suite
- Floor plan of six basement ORs to remain in use

Model Inputs



Poll 2

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Model Inputs

- Basic Process
- Block Schedule
- Staffing
- Case Cart Utilization
- Procedure Characteristics
  - Procedure time
  - Setup time
  - Cleanup time

Model Inputs

- Case Load Data
  - Procedure
  - Surgeon
  - Originally scheduled OR
  - Urgent?
  - Trauma?
  - Peds?
  - Service Date

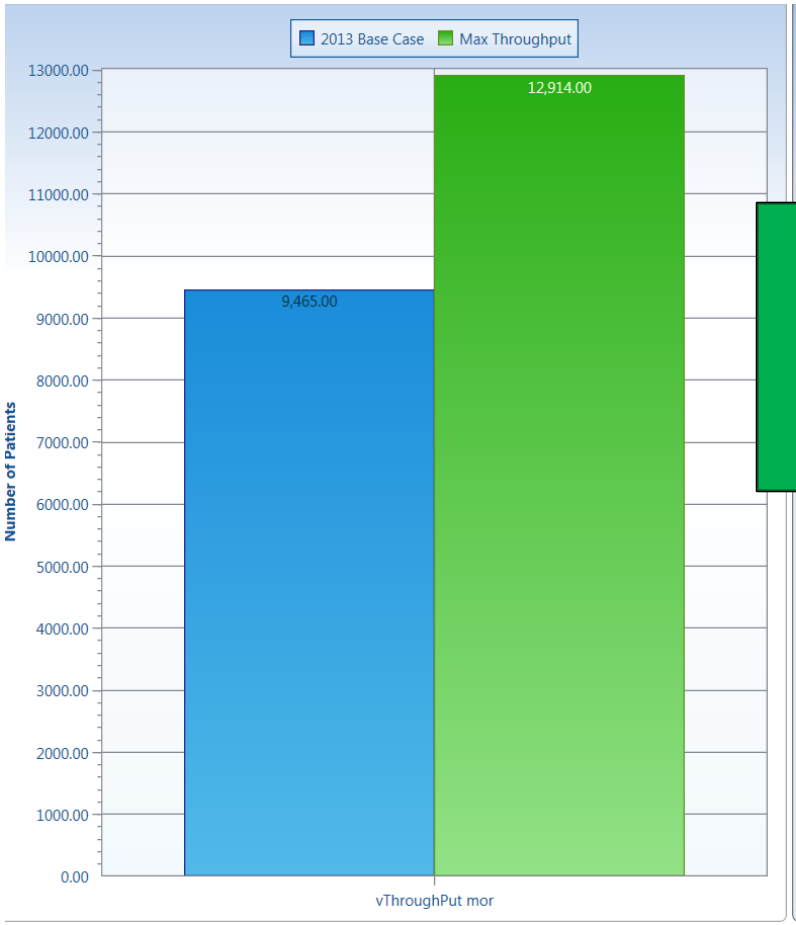
Model Inputs - Input Data File

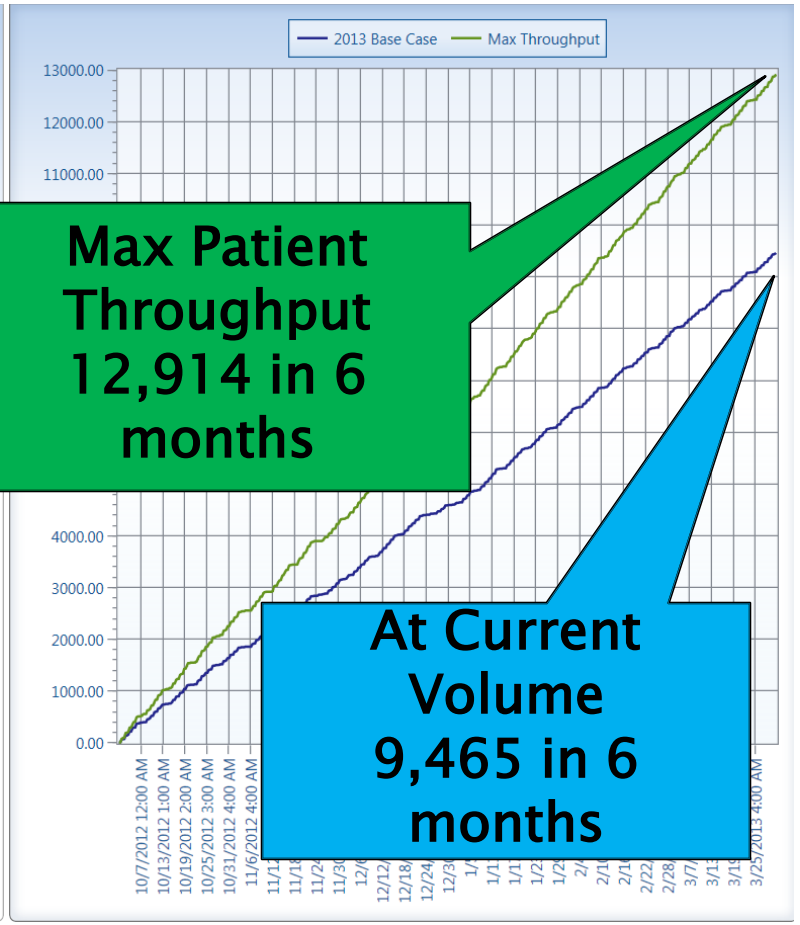
- Use Excel spreadsheet to import values into the model
- Spreadsheet Demo

Poll 3

Model Demo

Model Outputs - Patient Throughput



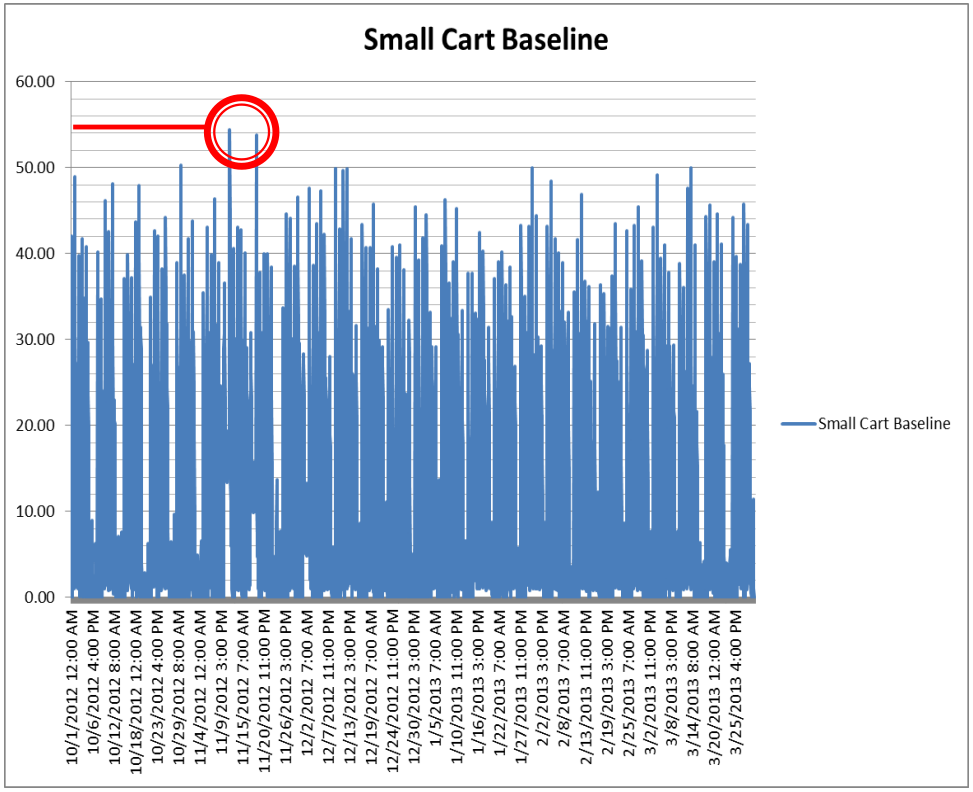


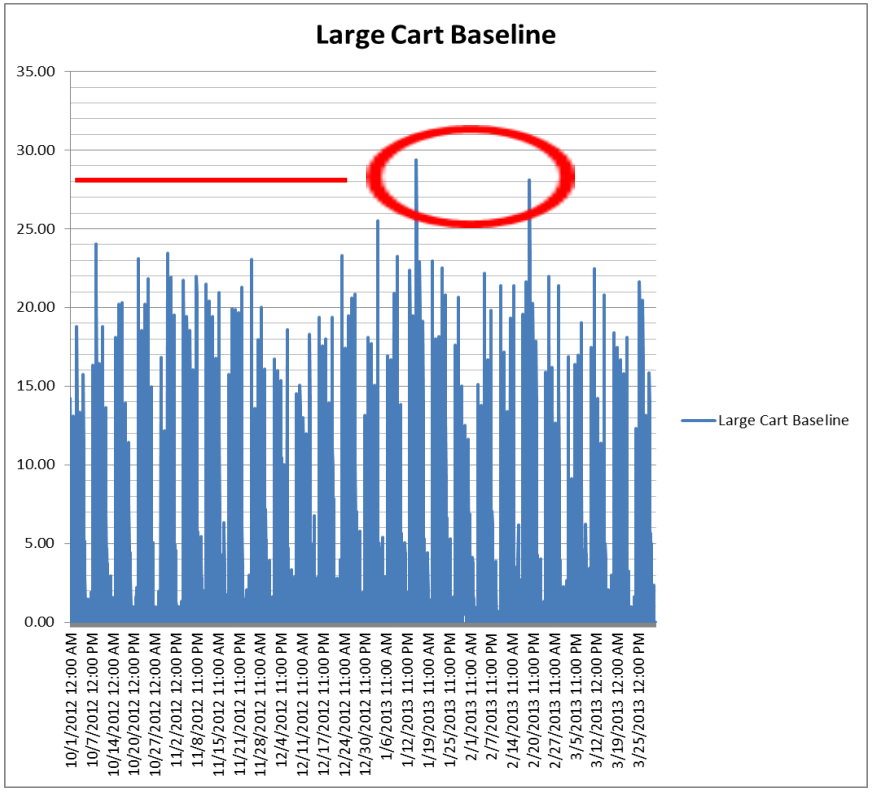
Max Patient Throughput 12,914 in 6 months

At Current Volume 9,465 in 6 months

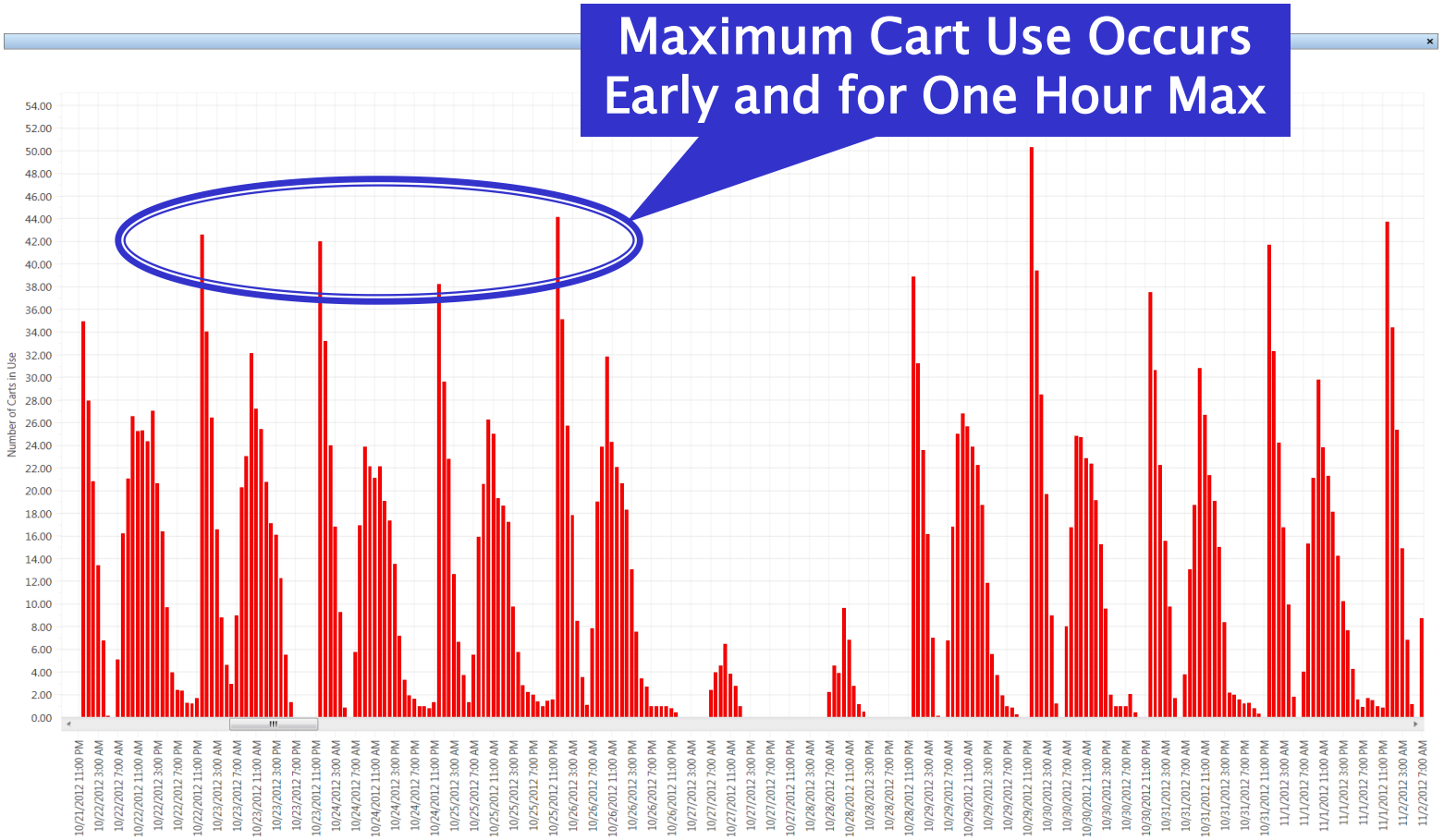
Model Outputs - Case Cart Use

55 small carts and 28 large carts needed to ensure no delays due to case carts





Model Outputs - Case Cart Use



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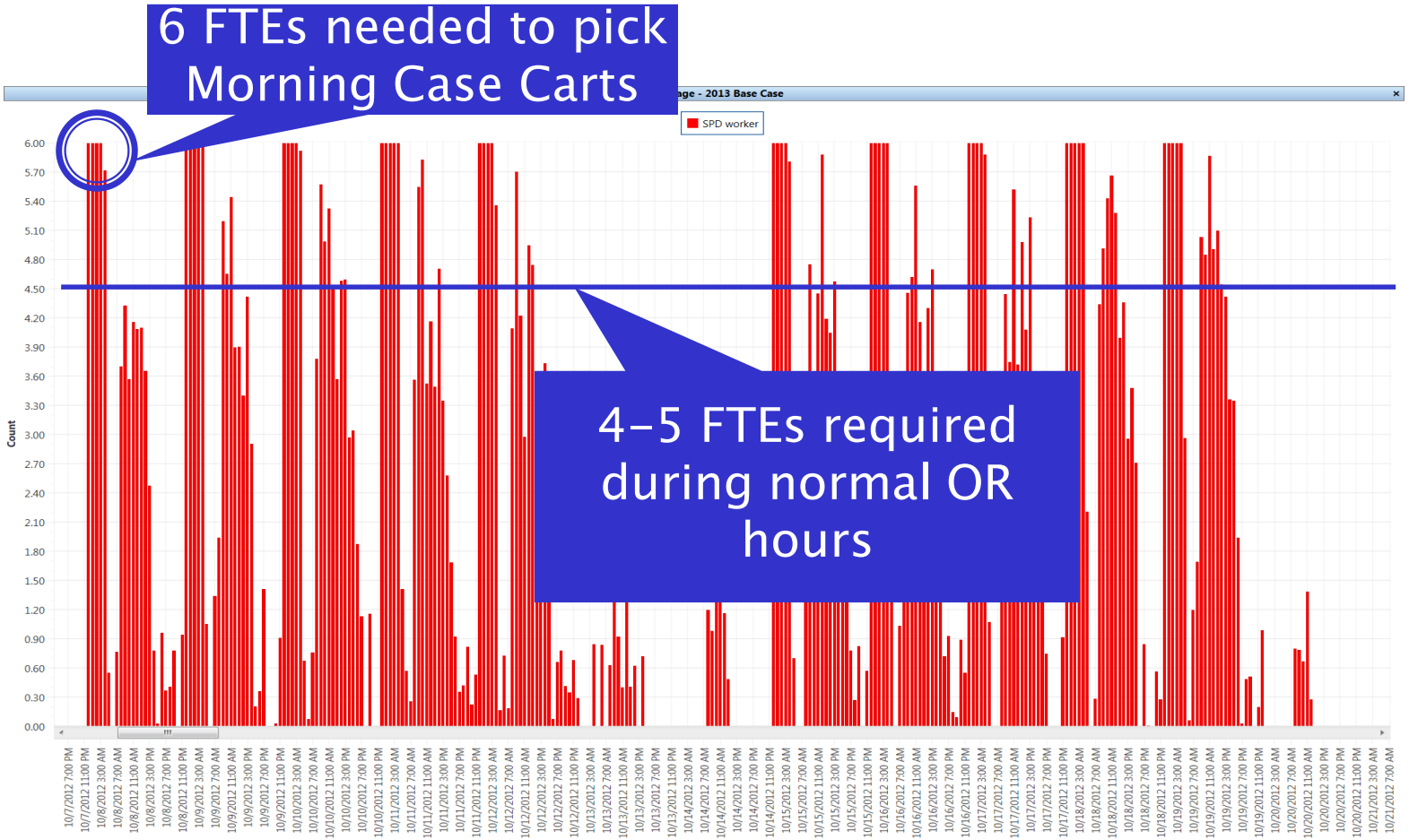
Model Outputs - Case Cart Use

Cart picking must begin as soon as possible after midnight to ensure there are two procedures' worth of carts ready at the start of the day.

This is true for Current Demand as well as Max Throughput.

Model Outputs - SPD FTE Use



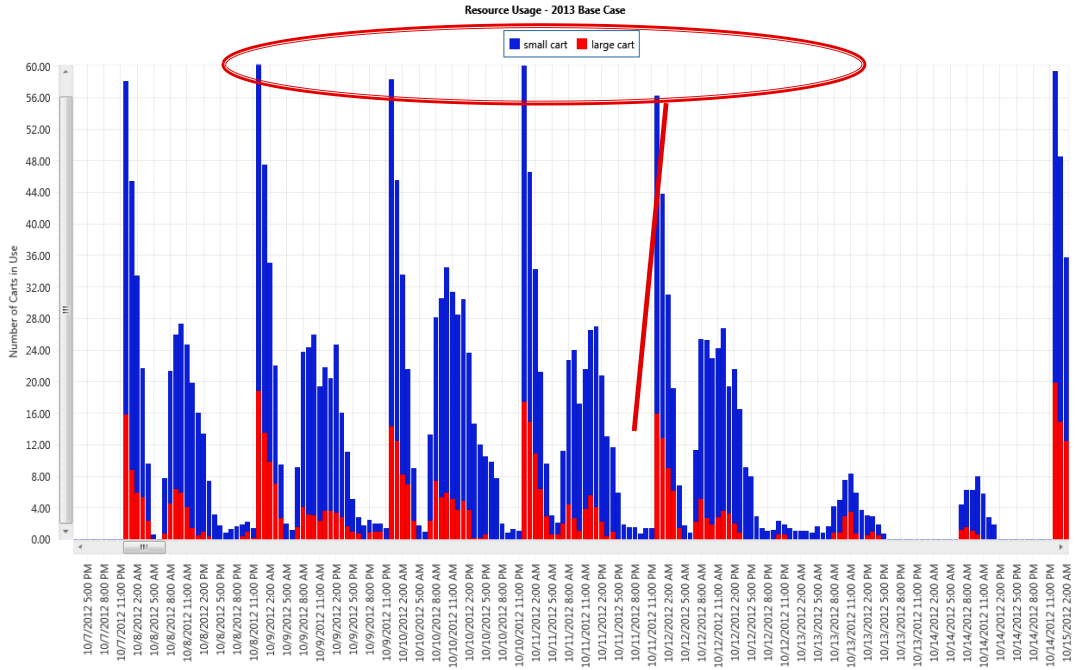
Model Outputs - Patient Flow Times

Patient Type	Overall Cycle Time	OR Time	Pre-Op Time	Post-Op Time	Delay Time	Delay Due to Case Carts
Main OR	445 Min	174 Min	65 Min	144 Min	62 Min	10 Min
SDS	310 Min	94 Min	68 Min	74 Min	74 Min	10 Min
Peds	399 Min	86 Min	90 Min	145 Min	78 min	7 Min
Overall	425 Min	144 Min	72 Min	144 Min	63 Min	8.5 Min

No Significant Delay Due to Case Carts (Assuming Proper Resourcing & Current Demand Profile)

Model Outputs - Minimum Cart Staging

- Goal is to have carts ready to serve the first two procedures each day; this will keep flow steady
- Becomes even more important as volume increases



- Having first two cases ready keeps carts in use
- As use decreases during day, dirty carts can be recycled and picked for the next day (starting around midnight)
- OR case delays will be avoided

Model Outputs-Maximum System Volume

Metric	Current State	Maximum Throughput	Percent Difference
Throughput	1572/Month	2172/Month	+38 %
Cycle Time	425 Min	476 Min	+12 %
Large Carts	28	32	+14 %
Small Carts	55	65	+18 %
Staged Carts	~ 60	60+	

At these higher volumes both POCU and PACU spaces become limiting factors

Poll 4

Next Steps?

- Determine level of Pre- and Post-Op spaces needed to maximize OR use
  - Identify potential bottlenecks due to lack of space.
  - Determine impact of additional spaces on patient flow, work flow and staffing.

Next Steps?

- Provide a Reusable decision support platform for the Surgical Department to test initiatives to improve overall throughput
  - Test scenarios around new OR suite ramp up – equipment arrival, "go live" dates.
  - Examine OR case mix (within the block) How does it impact OR Suite utilization and/or inpatient bed utilization?
  - Examine impact of resources and their respective function on overall throughput of the perioperative service area

Next Steps?

- Identify bottleneck areas in the OR process as the move into the new ORs proceeds and is combined into two geographic locations.
- Examine the impact of future demand over a 5-10 year window as workflow is redesigned.
- Determine resource requirements and identify bottlenecks in key areas.
- Examine SPD functions more closely and it's throughput

Thank You!

Questions ??

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