



## Six Sigma DMAIC Improvement Story

Project Objective:  
To Increase the Percentage of Calls Answered on Time  
(within 2 Minutes of Queue)

### The Drips



Team: Lourdes Avalos (Team Lead)  
Harold Concepcion, WASD      Damarys Isler, WASD  
Ray Scher      Carlos Maxwell  
Bill Johnson/Lester Sola, Water & Sewer - Sponsor

# Identify Project Charter

Project Charter		
Business Case	<i>Project Name:</i>	To increase the % of Calls Answered within 2 Minutes of Queue.
	<i>Problem/Impact:</i>	Call Answer time is well beyond the acceptable threshold of 2 minutes, causing many complaints and an overall bad perception of the call center's customer service.
	<i>Expected Benefits:</i>	Improved customer experience, along with reduced customer complaints about wait times.
Objectives	<i>Outcome Indicator(s)</i>	Q2 - Percentage of Calls Answered within 2 minutes of Queue.
	<i>Proposed Target(s)</i>	Target= 80%
	<i>Time Frame:</i>	August 2014 thru June 2015
	<i>Strategic Alignment:</i>	Supports the County's Business Plan
Scope	<i>In Scope:</i>	All WASD Customer Service Skillsets/call types. (Eight specifically-identified WASD call types being answered by the 311 Call Center effective November 2014.) NOTE: Call HANDLE time was addressed in a prior LSS project.
	<i>Out-of-Scope:</i>	All other call types.
	<i>Authorized by:</i>	WASD Director Bill Johnson / Lester Sola
Team	<i>Sponsor:</i>	Director Bill Johnson / Lester Sola, Ray Scher
	<i>Team Leader:</i>	Lourdes Avalos
	<i>Team Members:</i>	Ray Scher, Carlos Maxwell, Damarys Isler, Harold Concepcion.
	<i>Process Owner(s):</i>	Michael Amador, Division Director
	<i>Mgmt Review Team:</i>	Ray Scher
Schedule	<i>Completion Date:</i>	1-Jun-15
	<i>Review Dates:</i>	Monthly, with Final Review June 2015
	<i>Key Milestone Dates:</i>	See Action Plan.



# Lean Six Sigma Problem Solving Process

The team utilized the 5-Step DMAIC problem solving process.

## DMAIC Performance Improvement Process

Process Step		Description of Team Activities
Number	Name	
1	DEFINE	<ul style="list-style-type: none"> <li>• Select Problem</li> <li>• Identify Project Charter</li> <li>• Develop Project Timeline</li> <li>• Establish Method to Monitor Team Progress</li> <li>• Construct Process Flowchart</li> <li>• Develop Data Collection Plan</li> <li>• Display Indicator Performance “Gap”</li> </ul>
2	MEASURE	<ul style="list-style-type: none"> <li>• Stratify Problem (i.e. “Gap”)</li> <li>• Identify Problem Statement</li> </ul>
3	ANALYZE	<ul style="list-style-type: none"> <li>• Identify Potential Root Cause(s)</li> <li>• Verify Root Cause(s)</li> </ul>
4	IMPROVE	<ul style="list-style-type: none"> <li>• Identify and Select Improvement(s)</li> <li>• Identify Barriers and Aids</li> <li>• Develop and Implement Improvement Plan</li> <li>• Confirm Improvement Results</li> </ul>
5	CONTROL	<ul style="list-style-type: none"> <li>• Standardize Improvements within Operations</li> <li>• Implement Process Control System (PCS)</li> <li>• Document Lessons Learned</li> <li>• Identify Future Plans</li> </ul>



# Develop Project Timeline Plan

A timeline was developed:

<b>Legend:</b>	
	= Actual
	= Proposed

**WHAT: Complete DMAIC Story Project by June, 2015.**

DMAIC Story Process Step	WHEN														
	2014					2015									
	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct
1. Define		Completed													
2. Measure			Completed												
3. Analyze						Completed									
4. Improve													Ongoing		
5. Control													Ongoing		



# Monitor Team Progress

The Team and Management used a Checklist to monitor team progress.

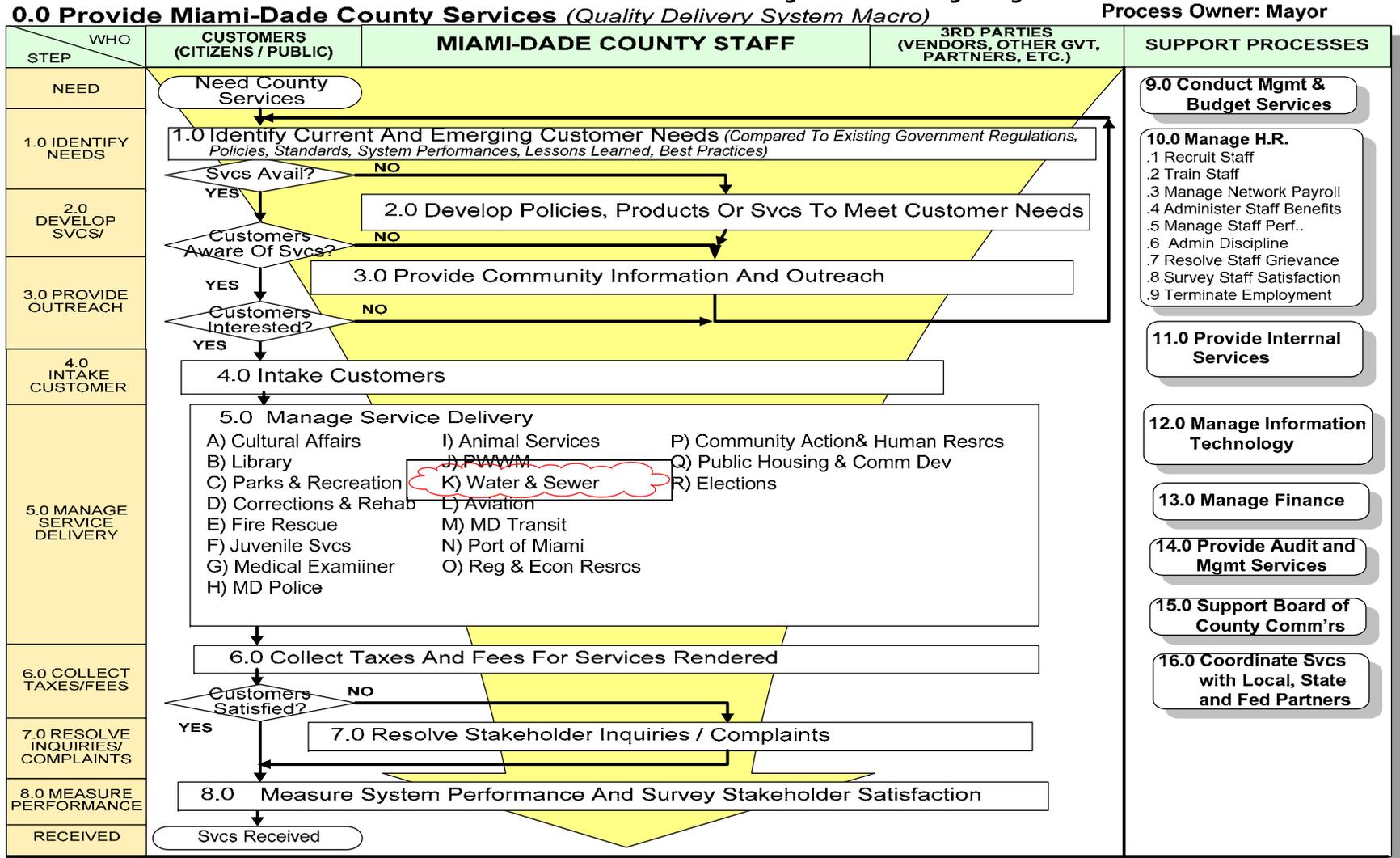
DMAIC Story Checkpoints			
PLAN	Step 1 Define	<b>Objective: Demonstrate the importance of improvement needs in measurable terms.</b>	
		1. The stakeholders' need(s) were identified.	
		2. The problem can be described as an "object" with a "defect" with unknown cause(s) that need to be identified.	
		3. A line graph outcome indicator was constructed that appropriately measures the problem (or gap).	
	Step 2 Measure	<b>Objective: Investigate the features of the indicator, stratify the problem and set a target for improvement.</b>	
		5. Data contained or directly linked to the indicator were stratified from various viewpoints (i.e., what, where, when and who) and a significant dataset was chosen.	
		6. A target for improvement was established based on the stakeholders' need.	
		7. The impact of the target on the indicator was determined.	
	Step 3 Analyze	<b>Objective: Analyze the stratified data to identify and verify the root causes.</b>	
		9. Cause and effect analysis was taken to the root level.	
		10. Potential causes most likely to have the greatest impact on the problem were selected.	
		11. A relationship between the root causes and the problem was verified with data.	
DO	Step 4 Improve	<b>Objective: Develop and implement countermeasures to eliminate the verified root causes of the problem.</b>	
		13. Countermeasures were selected to address verified root causes.	
		14. The method for selecting the appropriate countermeasures was clear and considered effectiveness and feasibility.	
		15. Barriers and aids were determined for countermeasures worth implementing.	
	CHECK	Step 5 Control	<b>Objective: Confirm that the countermeasures taken impacted the root causes and the problem; and that the target has been met.</b>
			17. The effect of countermeasures on the root causes was demonstrated.
			18. The effect of countermeasures on the problem (or indicator) was demonstrated.
			19. The improvement target was achieved and causes of significant variation were addressed.
ACT	Step 5 Control	<b>Objective: Prevent the problem and its root causes from recurring. Maintain and share the gains.</b>	
		21. A method was established to document, permanently change, and communicate the revised process or standard.	
		22. Responsibility was assigned and periodic checks scheduled to ensure compliance with the revised process or standard.	
		23. Specific areas for replication were identified.	
	Step 5 Control	<b>Objective: Evaluate the team's effectiveness and plan future activities.</b>	
		24. Any remaining problems (or gaps) were addressed.	
		25. Lessons learned, P-D-C-A of the Story process, & team growth were assessed & documented.	

- ✓ Team identified an indicator; developed a Flowchart and a Spreadsheet
- ✓ Spreadsheet
- ✓ Line Graph
- ✓ Histograms and Paretos
- ✓ Single Case Bore Analysis and Fishbone
- ✓ Countermeasures Matrix; Barriers and Aids; Action Plan
- ✓ Before and After Line Graph
- ✓ Process Control System; Flowchart
- ✓ Lessons Learned



# Review Quality Delivery System

The team reviewed the Miami-Dade Quality Delivery System.

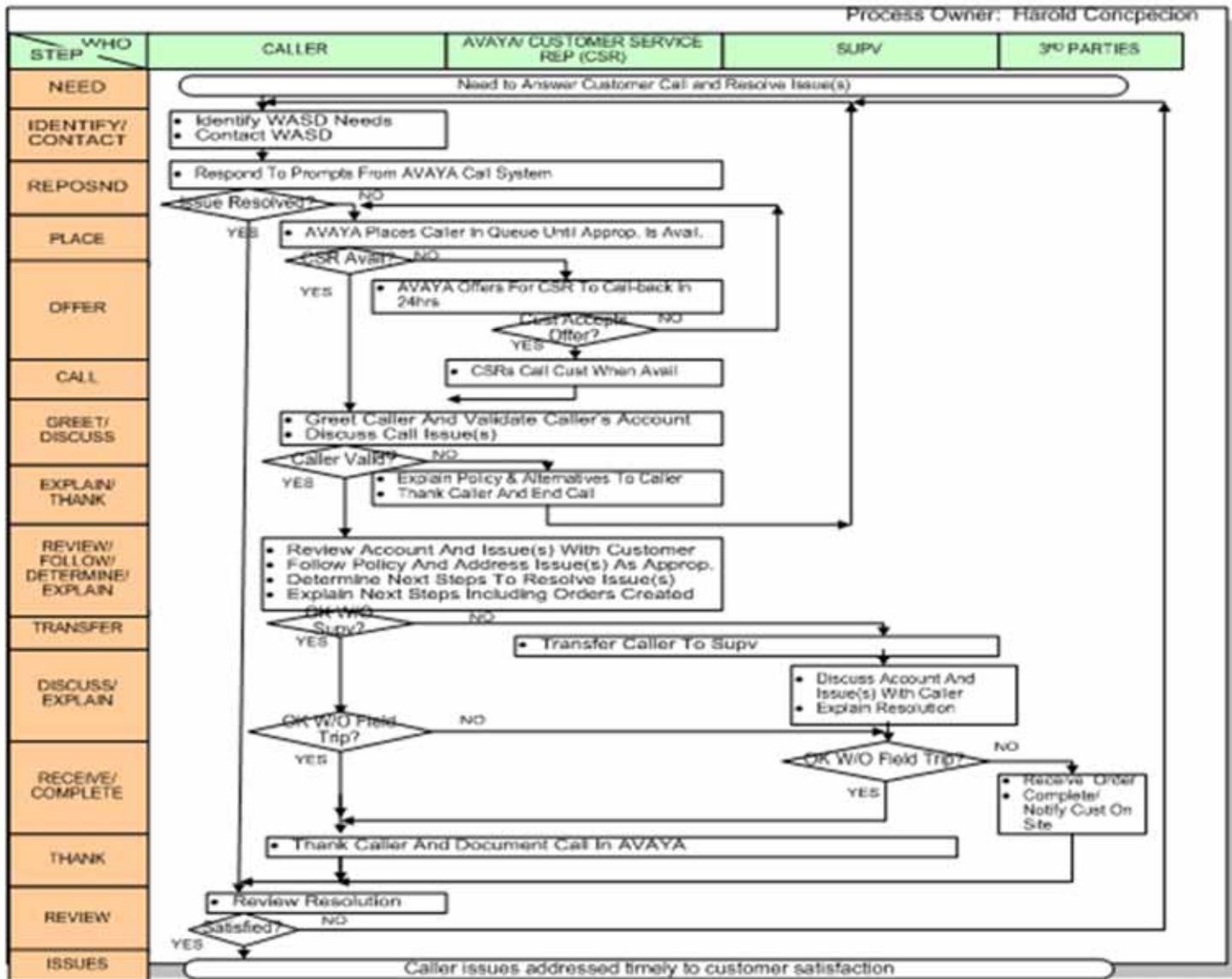


The team will focus on a "core" delivery process in the WASD service area.



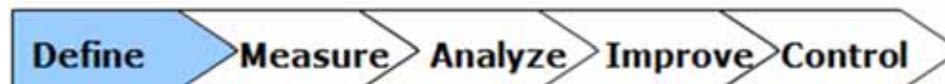
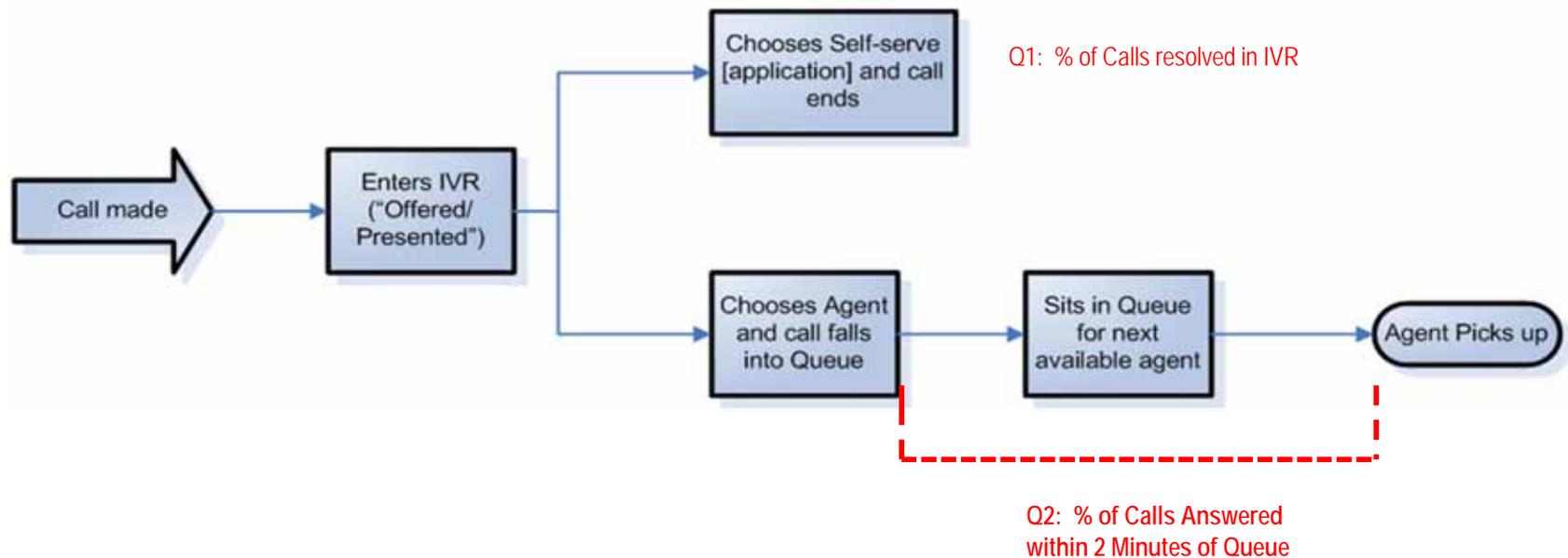
# Review Process Flow Chart

Increase % of Calls Answered within 2 Minutes of Queue.



# Review Process Flow Chart

## WASD: CALL MANAGEMENT



# Affects of Delayed Call Answer Time:

Staff considered the affects of delayed Answer Time on a Customer Service Call:

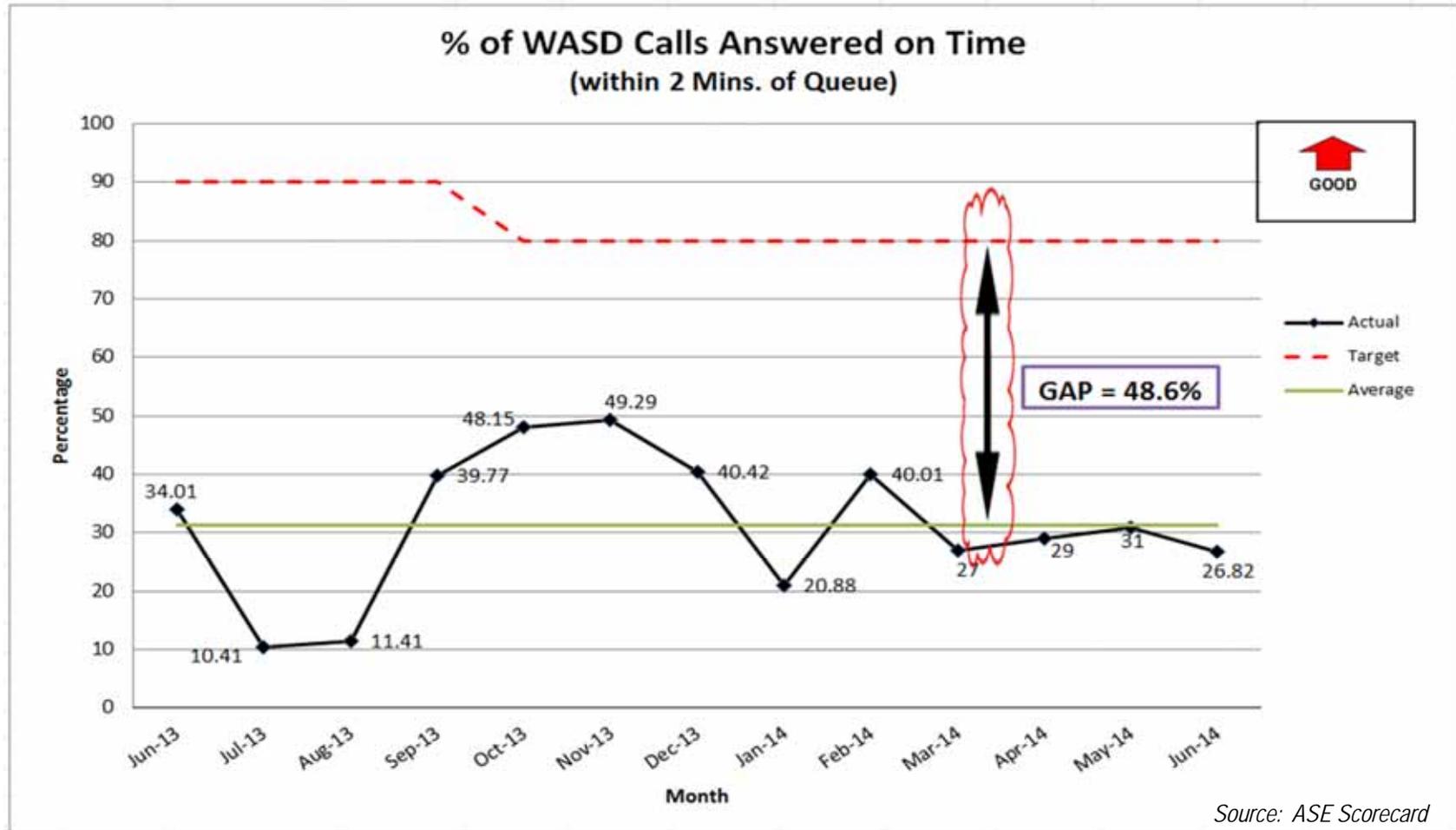
for CUSTOMER:	for MIAMI-DADE COUNTY <b>and</b> /or WASD:
Dissatisfaction with County services	Employee burnout, frustration, lowered morale
Customer's wasted time	Rise in Complaints
	Tarnished reputation

So next, the team captured the current status on a line graph.



# Review Selected Indicator

The team collected Q2 indicator data and reviewed performance trends:  
Q2 - % of WASD Calls Answered on Time

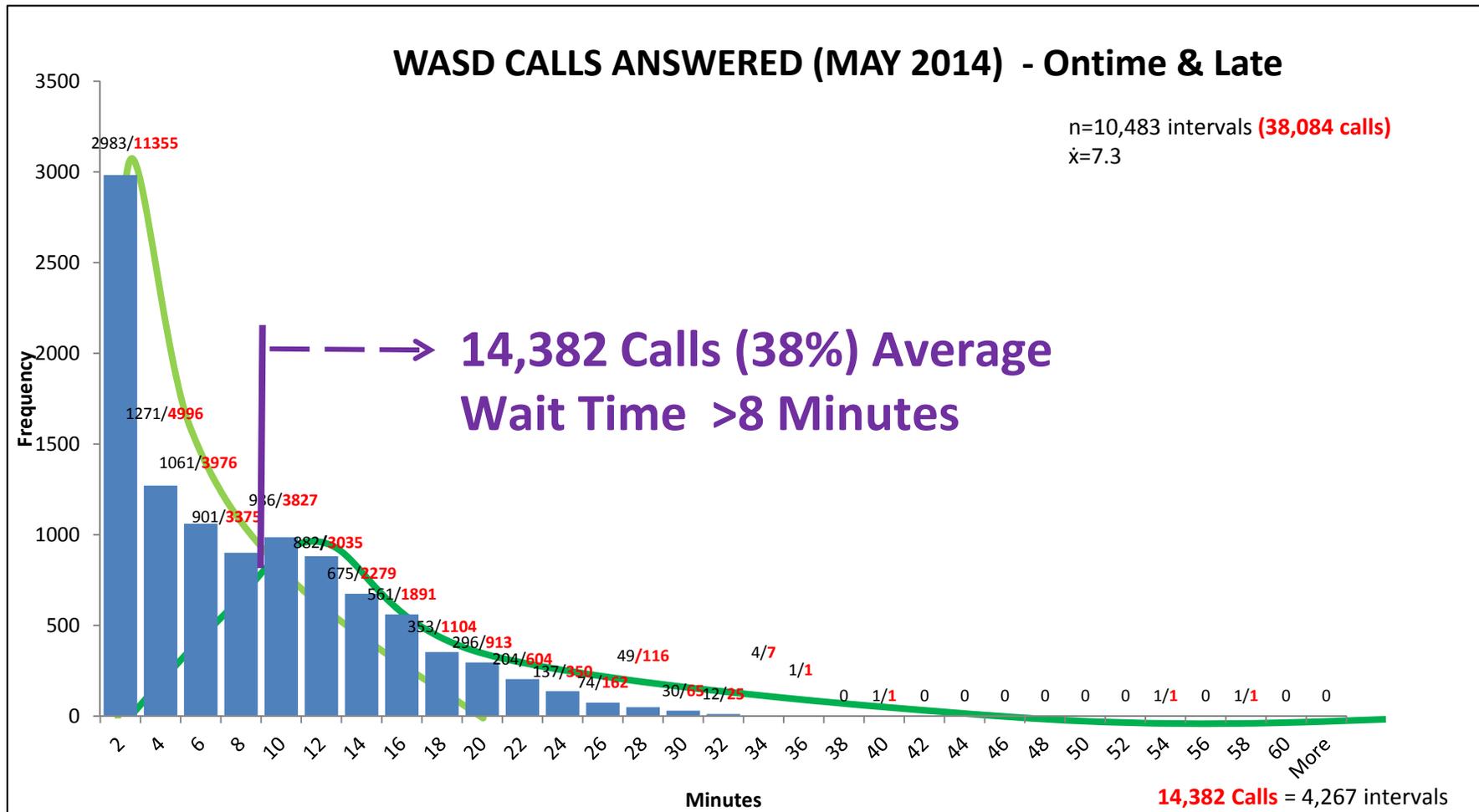


So the team began to study the call details.

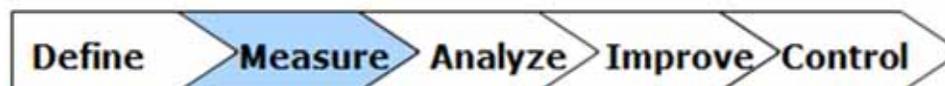


# Stratify the Problem

The team stratified Call data from the month of May 2014 (38,084 calls) and found:

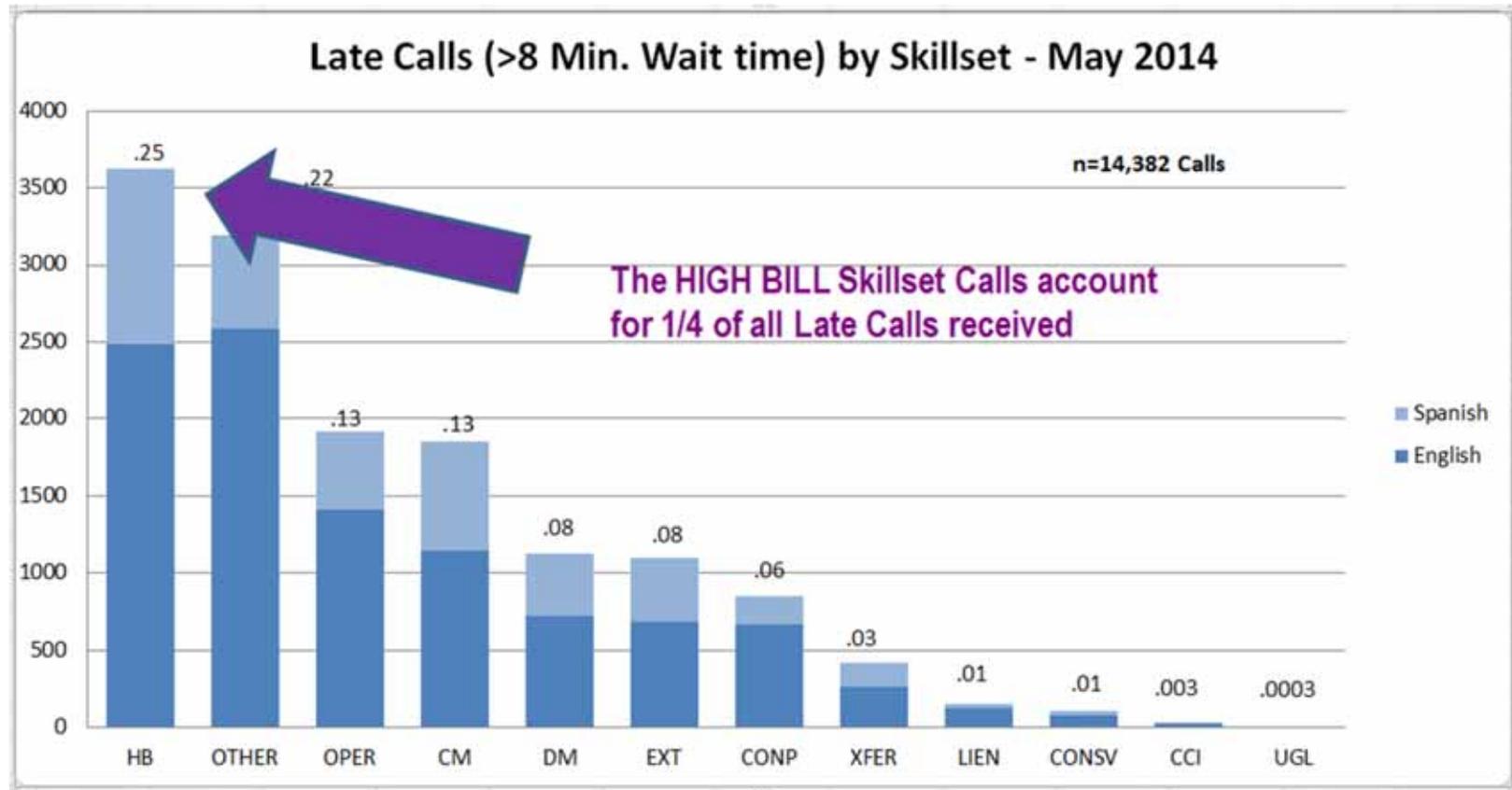


So the team stratified the call details for the 14,382 calls answered after 8 minutes (“late”).



# Stratify the Problem

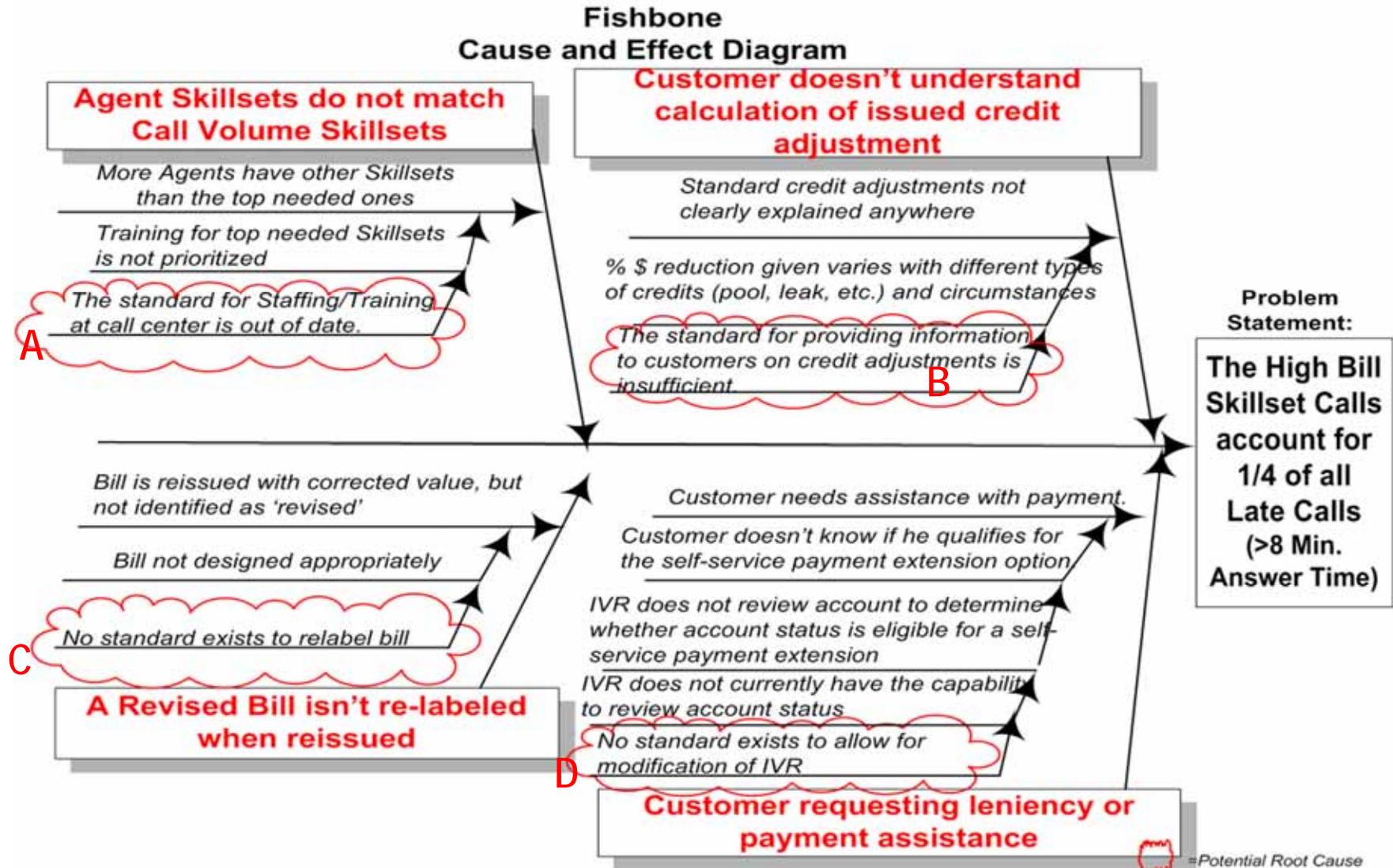
A call's Answer Time ("Wait Time") can be attributed to the prior call's Handle Time, Call Volume, or Staffing. Handle Time was addressed in a prior project, and some staffing changes are currently being implemented, so the team narrowed in on **Call Volume**. In looking at the Volume of late calls (14,382) the team discovered that:



**PROBLEM STATEMENT:** The High Bill Skillset Calls account for 1/4 of all Late Calls (>8 Min. Answer Time)

# Identify Potential Root Causes

A Fishbone Diagram was performed, to identify reasons for the voluminous number of late High Bill calls.



# Verify Root Causes

The team collected data to verify the root causes and found:

11,12. 

Root Cause Verification Matrix		
Potential Root Cause	How Verified?	Root Cause or Symptom
<b>A</b> Standard for staffing/training at call center is out of date.	See Appendix A attached.	Root Cause
<b>B</b> Standard for providing information on credit adjustments is insufficient.	Team reviewed website and confirmed that neither explanation of standard credit amounts, nor standard amounts are posted.	Root Cause
<b>C</b> No standard exists to relabel bill.	Team reviewed a sample reissued bill and confirmed that revised bill is not marked as such, nor provides instructions to void previous one issue.	Root Cause
<b>D</b> No standard exists to allow for modification of IVR	Team listened and confirmed that the IVR recording does not qualify account for self-service payment extension. Technical support for IVR modification is no longer in place. Nortel Phone system is in the process of being replaced with an Avaya system.	Root Cause

Each potential root cause was validated.

# Identify and Select Countermeasures

13.,14. 

The team brainstormed many countermeasures and narrowed them down to these for evaluation:

Countermeasures Matrix						
Problem Statement	Verified Root Causes	Countermeasures	Ratings			
			Effectiveness	Feasibility		
			Overall	Take Action? Yes/No		
<p><b>The HIGH BILL Skillset Calls account for 1/4 of all WASD Late Calls (&gt;8 Mins. Wait Time)</b></p>	A - The standard for staffing/training at call center is out of date.	Provide HIGH BILL Skillset training as part of Level 1 training (initial set of skillsets) to all new calltakers, thereby increasing the pool of capable agents on that skillset.	3	5	15	Y
	B - The standard for providing information on credit adjustments is insufficient.	Provide an example on the website of a sample pool or leak credit scenario, showing allowable ccfs credited and \$ credit due AND/OR add an insert to bill with rate structure	*	5	15	Y
	C - No standard exists to relabel bill.	Redesign the bill with a REVISED heading by <b>coding a reissued bill printed within the same billing cycle</b> OR: stamp the revised bill with a handheld stamp.	3	5	15	Y
	D - No standard exists to allow for modification of IVR.	Ensure new Avaya phone system configuration will perform review/qualification of account to determine whether account is eligible for a self-service payment extension.	5	5	25	Y

The team selected countermeasures for implementation.



# Identify and Select Countermeasures

13.,14. 

Additional Ideas to consider:

- Relabel HIGH BILL to just BILLING call type
- Consider 'staffing pod' for BILLING calls and allocate appropriate average # of Call-takers. Identify dedicated staff to handle BILLING calls as their top priority, and then other calls as available
- Ensure (or prioritize training for) Call-takers that had OTHER and OPERATOR Skillset type also have BILLING Skillset
- Track # of BILLING callback requests (impacting available staff and ports)
- Consider acquiring license for Workforce Optimization software module, to assist with staff scheduling (call outs)

# Identify Barriers and Aids

The team performed Barriers and Aids analysis on the selected Countermeasures.

Barriers			Aids	
Impact (H, M, L)	Forces against Implementation		Forces For Implementation	
H	1)	Calltaker attrition <i>(Supported by Aids: A, D)</i>	A)	Management very supportive of team's efforts in addressing problem, can approve/expedite hiring.
M	2)	Difficult to pull Calltakers away from phones for additional trainings <i>(Supported by Aids: C, D)</i>	B)	Web content is available; website currently under reconstruction
H	3)	Limited IT support <i>(Supported by Aids: B, C)</i>	C)	Management very supportive of team's efforts in addressing problem, can reprioritize IT workload
			D)	Better Caller experience

The team next sought to incorporate this analysis into their Action Plan.



# Develop and Implement Action Plan

Legend:  
 ■ = Actual  
 □ = Proposed

The team implemented an Action Plan for their Countermeasures.

16. 

	Develop Countermeasures:	WHO	WHEN									
			2015									
			Mar	April	May	Jun	Jul	Aug	Sep			
1	<b>Redesign the bill with a REVISED heading using coding. OR: stamp the revised bill with a handheld stamp.</b>	Division Director										
2	<b>Provide sample scenario of pool/leak credit on webpage and/or provide insert</b>	Division Director										
3	<b>Include payment extension qualification review on the design of the new IVR.</b>	Division Director										
4	<b>Relabel HIGH BILL skillset/call type to BILLING</b>	Manager (Damarys)		■ Completed								
5	<b>Provide BILLING training as part of Level 1 training (initial set of skillsets) to all new calltakers</b>	Manager (Damarys)		■ Completed								
6	<b>Ensure calltakers with OTHER and OPERATOR skillsets also have BILLING skillset training</b>	Manager (Damarys)		■ Completed								
7	<b>Track number of BILLING callback requests</b>	Manager (Damarys)		■ Completed								
8	<b>Consider Workforce Optimization software (or similar product) to assist with Staff Resourcing</b>	Division Director			■ Ongoing							

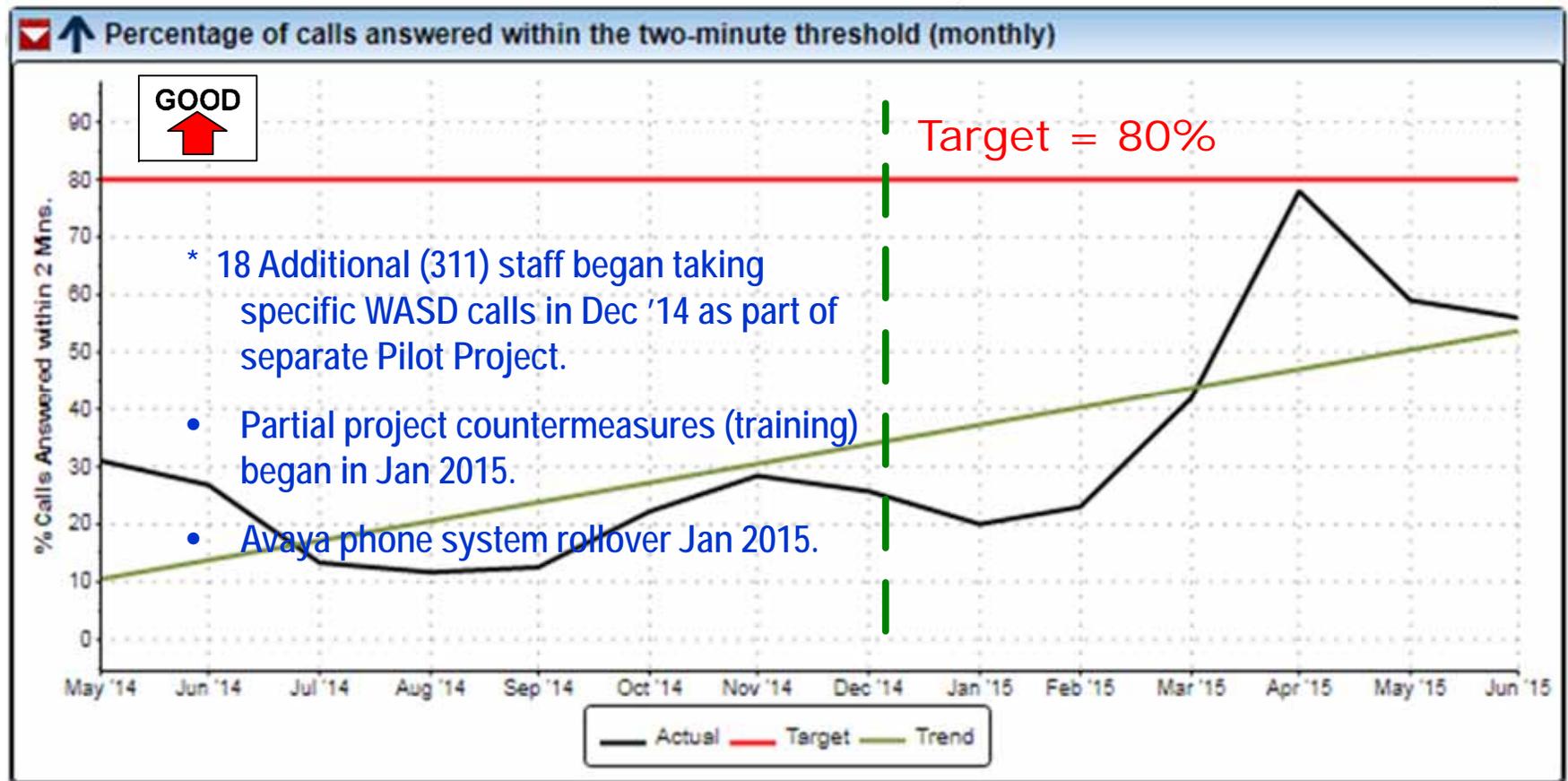


# Review Results

17.,18.,19.,20. ✓

The team collected indicator data and reviewed results of its implemented countermeasures.

## Q2 – % of WASD Calls Answered on time (within 2 Mins. of Queue)



The team will continue the implementation and monitoring of the countermeasures.

# Standardize Countermeasures

21.,22.,23. ✓

The team developed a Process Control System (PCS) to monitor the process ongoing.

Process Control System						
<b>Process Name:</b> Increase % of Calls Answered on time (within 2 minutes of Queue)			<b>Process Owner:</b> Division Director			
<b>Process Customer:</b> Callers to WASD Call Center			<b>Critical Customer Requirements:</b> to address customer concerns timely and accurately			
<b>Process Purpose:</b> to improve wait time @ WASD Call Center			<b>Current Sigma Level:</b> TBD		<b>Outcome Indicators:</b> Q2	
Process and Quality Indicators			Checking / Indicator Monitoring			Data Source
Process Indicators	Control Limits	Data to Collect	Timeframe (Frequency)	Responsibility	Who will Check?	
And						
Quality Indicators	Specs/ Targets	What is Checking Item or Indicator Calculation	When to Collect Data?	Who will Check?	Data Source	
Q1	% of Calls Resolved by IVR	?	# of Calls answered by IVR / #of Calls Answered x 100	Monthly	Damarys Isler	IVR
Q2	% of All Calls Answered on Time (within 2 minutes of Queue)	80%	# of Calls answered within 2 minutes / # of Calls Answered x 100	Monthly	Damarys Isler	IVR
Approved: _____		Date: _____	Rev #: _____		Rev Date: _____	

# Identify Lessons Learned

24.,25. 

## Lessons Learned:

- 1) Data, data, data! Having data to work with is crucial! It's hard to manage an operation with solely anecdotal information.
- 2) DMAIC Process is systematic and effective for problem solving. The team learned to trust the process and "let the data take you to the root causes".
- 3) Having a functional IVR reporting system helps us understand the true customer experience, which will help us identify additional fixes needed during Phase 2.

## Next Steps:

- 1) Continue to monitor the countermeasures and performance results.
- 2) Analyze Call Queue data and address long wait times.
- 3) Continue to monitor call stats after Workforce Optimization software is implemented to compare performance changes.

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# APPENDIX A

# APPENDIX A

A look at **All** Calls Answered (Volume) confirms that most calls are for High Bill and Other Skillsets...

