Westar Energy Saves 15% in Service Agent Overtime Using ProModel Simulation

Westar Energy

Success Story

Chemicals, Oil, Gas & Energy

ProModel

CHALLENGES

The energy industry changes at an unprecedented rate as companies contend with continuously fluctuating energy demands. Westar Energy, the largest electric provider in Kansas, is planning a merger with another utility company in order to improve competitiveness and customer service as well as to increase market size. The sharing of resources, infrastructure, assets, and business expertise will strengthen both companies.

However, the resulting organization and larger customer base also presents challenges. Before implementing any changes to current electric service agent policies and procedures, Westar wanted to be able to examine the effect of agent home base locations, area assignments, and shift schedules on costs and customer service Key Performance Indicators. They selected ProModel Corporation to provide them with a simulation modeling capability to assist with their analyses.

> ***"The amazing thing about the ProModel software tool is it allows you to create millions and millions of unique scenarios to run in a very short time. Processes are complex, but that's no reason to not listen to your data. ProModel can get you up and running with very little investment making a big impact on improving your processes."***
>
> **— Susan Quinn, Westar**
> **Operational Analytics Manager**

OBJECTIVES

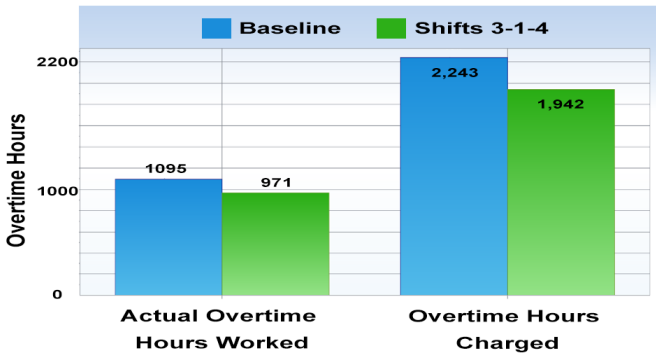
Westar needed to maximize the effectiveness and efficiency of agents in an expanded area. A well-designed model will provide data-driven insights to inform decisions under current and future business scenarios. Westar aimed to leverage the model to advise the following business objective:

- Identify the optimal placement of agent home bases
- Identify the right number of agents to cover the district

After an onsite assessment conducted by ProModel Corporation, Westar discovered that the model could guide these additional objectives:

- Understand how variation in shift schedules affects overtime charged
- Assign agents to areas in the most cost effective way
- Analyze how changing business parameters affects service level metrics

15% Reduction in Actual & Charged Overtime (Green) by Staggering Shifts



RESULTS

To date Westar has used the model to help identify a 15% reduction in charged overtime by staggering agent shifts to align resources availability to high volume trouble times. Going forward, Westar will leverage the model as a decision support platform to analyze capital ROI, continuous improvement initiatives, and districting strategies. With continued use of the model, Westar expects to find savings and efficiencies in all areas of their business.

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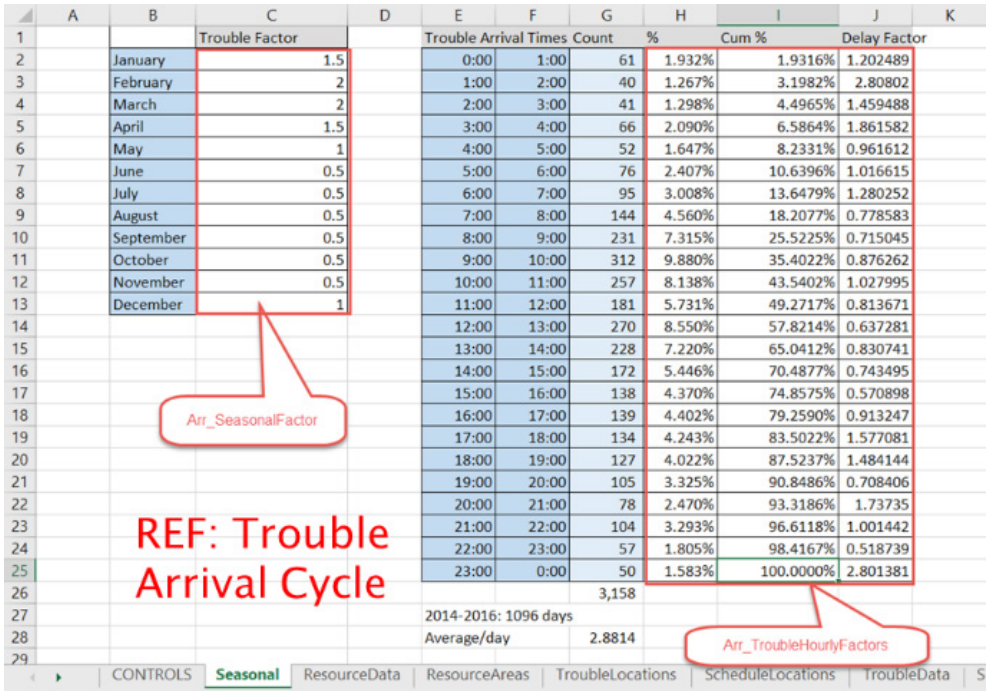
PROMODEL SOLUTION

ProModel consultants and the Westar process improvement team collaborated to develop a high-level discrete event simulation model capable of evaluating the order fulfillment process under various scenarios. “Trouble tickets” call off-shift or occupied workers into action. The initial model covers one district with a subset of resources. The single district approach allowed us to validate the accuracy of the model while developing a flexible and scalable platform to include all districts in future analysis.



	Trouble Factor
January	1.5
February	2
March	2
April	1.5
May	1
June	0.5
July	0.5
August	0.5
September	0.5
October	0.5
November	0.5
December	1

Trouble Arrival Times		Count	%	Cum %	Delay Factor
0:00	1:00	61	1.932%	1.9316%	1.202489
1:00	2:00	40	1.267%	3.1982%	2.80802
2:00	3:00	41	1.298%	4.4965%	1.459488
3:00	4:00	66	2.090%	6.5864%	1.861582
4:00	5:00	52	1.647%	8.2331%	0.961612
5:00	6:00	76	2.407%	10.6396%	1.016615
6:00	7:00	95	3.008%	13.6479%	1.280252
7:00	8:00	144	4.560%	18.2077%	0.778583
8:00	9:00	231	7.315%	25.5225%	0.715045
9:00	10:00	312	9.880%	35.4022%	0.876262
10:00	11:00	257	8.138%	43.5402%	1.027995
11:00	12:00	181	5.731%	49.2717%	0.813671
12:00	13:00	270	8.550%	57.8214%	0.637281
13:00	14:00	228	7.220%	65.0412%	0.830741
14:00	15:00	172	5.446%	70.4877%	0.743495
15:00	16:00	138	4.370%	74.8575%	0.570898
16:00	17:00	139	4.402%	79.2590%	0.913247
17:00	18:00	134	4.243%	83.5022%	1.577081
18:00	19:00	127	4.022%	87.5237%	1.484144
19:00	20:00	105	3.325%	90.8486%	0.708406
20:00	21:00	78	2.470%	93.3186%	1.73735
21:00	22:00	104	3.293%	96.6118%	1.001442
22:00	23:00	57	1.805%	98.4167%	0.518739
23:00	0:00	50	1.583%	100.0000%	2.801381
		3,158			
2014-2016: 1096 days					
Average/day		2.8814			

CONTROLS | Seasonal | ResourceData | ResourceAreas | TroubleLocations | ScheduleLocations | TroubleData

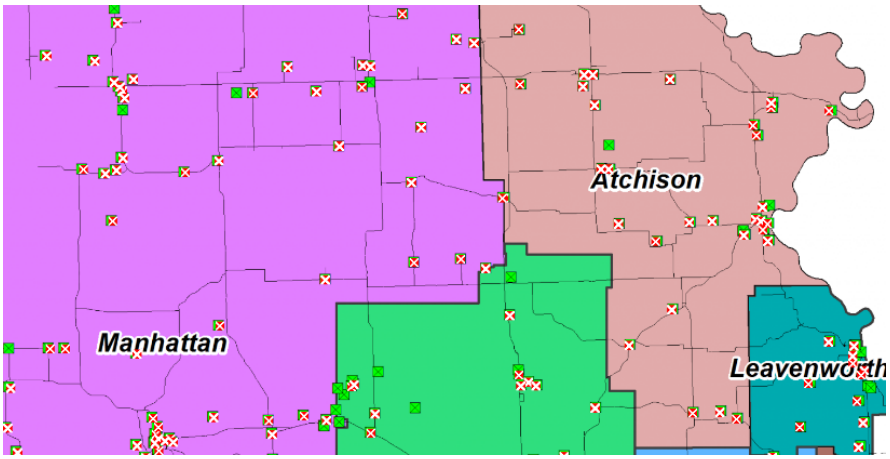
Trouble Ticket Arrival Table

In the primary model, Westar experimented with various staffing strategies to determine the most efficient way to improve service to customers and reduce operating costs. Simulation technology enabled Westar to validate the impact of proposed changes to both cost and service metrics. Service measurements attained under different conditions accounted for stormy weather, area assignments, and agent home placement.

Approximately 700 substation locations, territory wide, were included in the model. Each trouble ticket associated itself with a substation based on the ticket’s location. Trouble tickets arrive throughout the day and pre-empt the daily scheduled work, which begins at the start of each day. Historical data, including the increased frequency of trouble instances during storm seasons and the distribution of trouble ticket calls depending on time of day, drove the model.

Trouble ticket data including frequency, duration, and number of customers interrupted breaks down into categories based upon type, which includes some level of severity, and root cause. Trouble tickets call the closest qualified resource to resolve the order. An off-shift resource called in to address a trouble after the workday ends will incur a minimum of 3 hours of charged overtime. Westar has the ability to modify any of the model parameters to run unlimited “what-if” scenarios.

Agent boxes represent agent home locations. Agents begin simulation with a 30-minute dwell time. During this time, they pick-up equipment from their box or attend meetings before starting their daily work schedule. Driving distances factor into the service equation. Westar expects to build on this initial model and use it to study more of their distribution system operations in the near future.



Map Representing a Subset of Agent Home Locations

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