
APPENDIX H SKILL LEVEL ASSUMPTIONS

In determining the staffing resources needed to maintain ODOT's ITS infrastructure, it is necessary to develop some assumptions about how effectively and efficiently ODOT staff may be able to repair malfunctioning devices. This appendix highlights assumptions that were used to guide the number of times higher-level support would be called in for assisting in maintenance, and how long it would take them.

H.1 Diagnostic Effectiveness

The first set of assumptions deals with diagnostic effectiveness, or with what rate of success a given ODOT technician is able to diagnose a device component's problem. For field components, the following assumptions were made.

- Support coordinators would be currently able to diagnose 70 percent of problems with field components; they will be able to diagnose 90 percent of problems in the future (i.e. under the Strategic Plan). This reflects an anticipated increase in the number and capability of self-diagnostic tools.
- Of field component problems that the support coordinators are unable to diagnose, electricians are assumed to be able to diagnose 80 percent of the problems.
- TSSU technicians are assumed to be able to diagnose all problems with field devices that are unable to be diagnosed by other ODOT staff.

For communications and computer-related components (i.e. IS-type components), the following assumptions were made.

- Support coordinators are currently able to diagnose 70 percent of problems with IS-type components; they will be able to diagnose 90 percent of problems in the future.
- Of IS-type problems that the support coordinators are unable to diagnose, the first-level of IS support (likely IS-5 for field devices and IS-6 for Salem-based repairs) is assumed to be able to diagnose 80 percent of the problems.
- Higher-level IS support is assumed to be able to diagnose all problems with communications and computer components that are unable to be diagnosed by other ODOT staff.

H.2 Repair Effectiveness

The ability to diagnose a problem does not necessarily imply that there is the ability to resolve the problem, especially at the support coordinator level. Consequently, a set of assumptions needed to be developed about the ability of various ODOT staff levels to be able to repair problems that have been successfully diagnosed. For field components, the following assumptions were used.

- Currently, support coordinators would be able to repair 50 percent of problems with field components; they will be able to repair 60 percent of problems in the future. This reflects an anticipated increase in modular components that may be swapped in and out without needing an electrician’s license.
- Electricians are assumed to be able to repair 90 percent of the problems of field component problems that the support coordinators are unable to repair.
- TSSU technicians are assumed to be able to repair all problems with field components that are unable to be repaired by other ODOT staff.

Table H-1 shows the results of these assumptions of diagnostic and repair effectiveness for field components. Based on these assumptions, electricians currently complete most repairs, although support coordinators will be able to diagnose most problems. In the future, the most typical repair scenario will be for a support coordinator to be able to both diagnose and repair malfunctioning field components. Electricians and TSSU are anticipated to have decreasing involvement in both diagnostics and repairs.

Diagnosed By	Repaired by			Sum	Current
	SC	Elec	TS		
Support Coord	35%	32%	4%	70%	
Electrician	0%	22%	2%	24%	
TS	0%	0%	6%	6%	
Sum	35%	53%	12%		

Diagnosed By	Repaired by			Sum	Future
	SC	Elec	TS		
Support Coord	54%	32%	4%	90%	
Electrician	0%	7%	1%	8%	
TS	0%	0%	2%	2%	
Sum	54%	40%	6%		

Table H-1: Current and Future Repair Effectiveness for Field Components.

For communications and computer-related components, the following assumptions were made.

- Support coordinators are currently able to repair 50 percent of problems with IS-type components; they will be able to repair 60 percent of these problems in the future.
- Of IS-related problems that the support coordinators are unable to diagnose, the first-level of IS support (likely IS-5 for field devices and IS-6 for Salem-based repairs) is assumed to be able to diagnose 80 percent of the problems.
- Higher-level IS support is assumed to be able to diagnose all problems with communications and computer components that are unable to be diagnosed by other ODOT staff.

Table H-2 shows what these assumptions mean in terms of who is able to successfully diagnose and repair malfunctioning computer or communications-related ITS device components. Support coordinators are anticipated to have an increasing role in diagnostics and repair activities, while IS technicians are anticipated to have a declining role.

H.3 Diagnostic and Repair Efficiency

Not only is it expected that support coordinators will have less ability to diagnose and repair malfunctioning components, but it is anticipated that they will be less efficient in their work than ODOT technicians who have more specialized skills. For field components, the following assumptions are utilized.

- An electrician is able to diagnose or repair a problem in 80 percent of the time that a support coordinator can.

- A TSSU technician is able to diagnose or repair a problem in 90 percent of the time that an electrician is able.

Similarly for IS-related components, the following assumptions have been made.

- A lower-level IS technician is able to diagnose or repair a communications or computer-related problem in 80 percent of the time that a support coordinator can.
- A higher-level IS technician is able to diagnose or repair a communications or computer-related problem in 90 percent of the time that the lower-level technician can.

Diagnosed By	Repaired by			Sum	Current
	SC	IS-low	IS-high		
Support Coord	35%	32%	4%	70%	
IS-low	0%	22%	2%	24%	
IS-high	0%	0%	6%	6%	
Sum	35%	53%	12%		

Diagnosed By	Repaired by			Sum	Future
	SC	IS-low	IS-high		
Support Coord	54%	32%	4%	90%	
IS-low	0%	7%	1%	8%	
IS-high	0%	0%	2%	2%	
Sum	54%	40%	6%		

Table H-2: Current and Future Repair Effectiveness for IS-Related Components.

