

Division of Operations Research On-Call (ROC) Task #5 - ODOT Overtime Management

Prepared by:

Kittelson & Associates Inc.

Bastian Schroeder

Tiffany Lim

Glenn Rowe

Kevin Lee

Prepared for:

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<p>ODOT funded this study to investigate existing overtime management practices in the US and search for potential automated systems that are capable of alleviating overtime management challenges. The project conducted a national scan and extensive agency outreach to evaluate existing systems. It further completed interviews with ODOT staff and developed a set of criteria for the overtime management system. An initial list of potential vendors was narrowed down to three that appeared to meet the detailed requirements and software demonstrations were scheduled with all three. Across vendors, the software was distributed as a software-as-a-service, resulting in an annual price to run the product and/or a one-time fee for professional services. The annual price was generally dependent on the number of active employees that could be contacted. Further studies should be conducted to assess the costs and savings of adopting a solution identified in this report prior to moving forward. Additionally, consideration for developing an in-house solution should be assessed.</p>			
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EXECUTIVE SUMMARY

ODOT follows an existing step-by-step process to establish a crew for an overtime need. The process follows requirements dictated in a collective bargaining agreement, which includes rules on the hierarchy of who gets called first, when the number of cumulative hours resets, etc. The existing practice is manual and time-consuming, with the Transportation Manager calling crewmembers one at a time and keeping a detailed record of each call for every unplanned overtime event. ODOT funded this study to investigate existing overtime management practices in the US and search for potential automated systems (in software) that are capable of alleviating overtime management challenges.

To evaluate needs and opportunities, internal meetings and interviews were conducted to understand ODOT's current practice. The current state of practice was documented in a flowchart to identify steps suitable for automation. A review of existing literature and documents from the Federal Highway Administration, Transportation Research Board, and American Association of State Highway and Transportation Officials was conducted to assess the state of practice in the US. Concurrently, a questionnaire was sent out to state DOT representatives and local agencies in Ohio to gain their perspectives, learn about past experiences, and get lessons learned from existing software deployments. Based on the assessment of the document scan and agency outreach, leads on potential automated systems were identified. Available overtime and staff scheduling systems used by state DOTs and industries, such as emergency services, security, and utilities, were assessed through conversations with vendors and examined against the identified needs. After the initial screening, software demos were scheduled for three vendors to understand product functionalities and product fit.

The document scan and agency outreach illustrated a potential gap in documentation of existing overtime management staffing practices across the US and a lack of adopted automated systems across the industry. A search for potential off-the-shelf automated systems determined that software capable of alleviating challenges related to overtime management and automating callout steps were available. Desired functionalities based on ODOT's needs and requirements included the ability to:

- ✓ Generate and/or process/update rule-based rosters;
- ✓ Automate rule-based shift callouts via phone and text;
- ✓ Launch callouts from desktop AND mobile app;
- ✓ Contact crewmembers one at a time in proper order;
- ✓ Receive and process responses from crewmembers; and
- ✓ Retain documentation of key information related to each call.

Through evaluating vendors against these criteria, Arcos was identified as a solution that could meet all the criteria and exceeded needs. Onsolve was another potential solution that met most criteria, and Vocantas met some criteria. Across all vendors, software was distributed as a

software-as-a-service, resulting in an annual price to run the product and/or a one-time fee for professional services. The annual price was generally dependent on the number of active employees that could be contacted.

Potential automated systems that met ODOT needs and requirements to address overtime management staffing challenges were identified through this project. Further studies should be conducted to assess the costs and savings of adopting a solution identified in this report prior to moving forward. Additionally, consideration for developing an in-house solution should be assessed.

PROJECT BACKGROUND

ODOT has an existing step-by-step process that staff must follow to establish a crew for an overtime need. The process follows requirements dictated in their collective bargaining agreement, which includes rules on the hierarchy of who gets called first, when the number of cumulative hours resets, etc. The existing practice is manual and time-consuming, with the Transportation Manager calling crewmembers one at a time and keeping a detailed record of each call for every unplanned overtime event.

ODOT funded this study to investigate existing overtime management practices in the US and search for potential automated systems to alleviate current overtime management challenges. The tasks for this project included:

- Document current ODOT practices and identify needs and requirements
- Assess existing overtime management practices through literature review, agency outreach, and agency interviews
- Identify potential automated systems to assist with overtime management challenges

APPROACH

Through internal meetings and interviews with ODOT staff on practices related to overtime management, needs and opportunities were identified to serve as a basis for the assessment of existing practices across the US and potential automated systems to assist with staffing management needs. The existing workflow was also documented in the form of a flow chart as a visual representation to identify automatable steps and be used for further conversations. A national practice scan of documents from the Federal Highway Administration, Transportation Research Board, and American Association of State Highway and Transportation Officials was reviewed to assess the current state of practice of overtime management in the US. Concurrently, a questionnaire was sent out to state DOT representatives and committees to gain perspectives on other experiences with overtime management.

Based on the findings from the document scan and agency interviews, potential leads on automated systems were identified and observations were noted on the lack of automated systems in overtime management practices across agencies. Available overtime and staff scheduling systems used by state DOTs and industries, such as emergency services, security, and utilities, were examined against the identified needs. Through vendor engagement, the flow chart documentation of ODOT's workflow for overtime management was leveraged in discussions to determine product fit and gaps. Demos were scheduled for the ODOT team to see the software in a relevant use case and assess product functionalities. The high-level approach is summarized in Figure 1. Details for the approach taken each step are documented below.

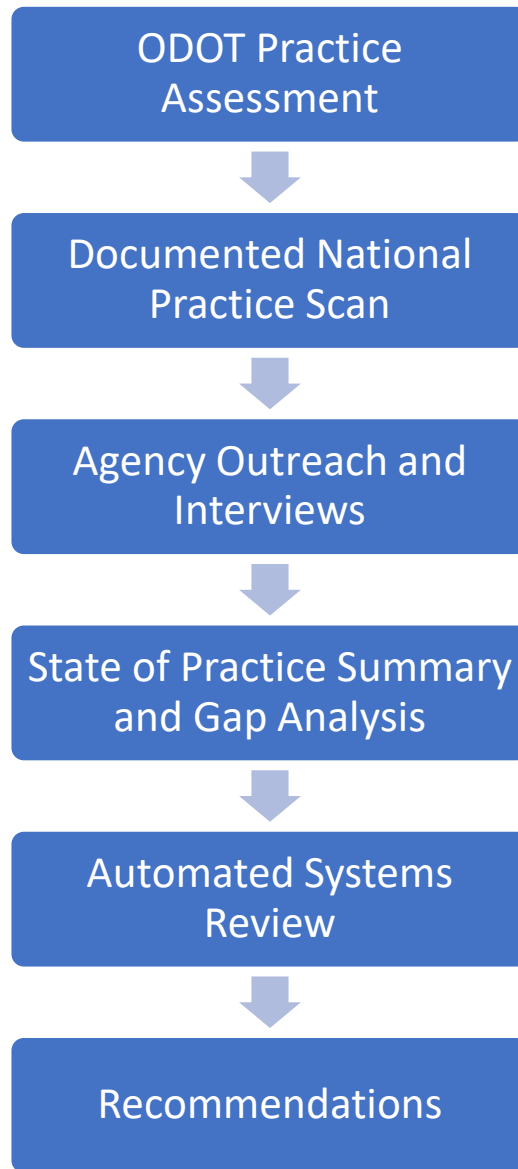


Figure 1. Flowchart of Project Approach

ODOT Practice Assessment

The project team conducted a review of ODOT practices and documented the current workflow and decision points management staff experience. ODOT explained their step-by-step process that their staff must follow to establish a crew to cover an overtime need. This includes the process dictated by their collective bargaining agreement, the hierarchy of who gets called first, backup lists, etc. Through the documentation of ODOT practices, the team also documented ODOT needs and requirements for a staffing management system. This documentation served as the evaluation criteria for identifying available automated systems in the following tasks. The following questions were prepared for guidance in conversations with ODOT to understand their current state of practice, needs, and requirements:

Questions for Contact Manager / Transportation Manager (TM)

- What are some challenges you face with regards to overtime staffing management? How have you tried to address these concerns so far? What worked and what didn't work?
- What is the current step-by-step process of filling an overtime need?
- Can you speak of a time where you had difficulty addressing an incident? What types of resources could have helped you handle the situation better?
 - Are there any information/data/tools you currently lack access to that could improve your workflow/address your concerns?
 - What types of changes would you like to see implemented to shorten response time?

Questions ODOT Laborers Union Representative

- Can you walk through your workflow when dealing with grievances?
- What are some common issues/challenges that come up when dealing with grievances/complaints?
- Can you speak of a time where you had difficulty addressing a grievance? What types of resources do you think could have helped you handle the situation better and/or more efficiently?

Documented National Practice Scan

The project team reviewed available documents from Federal Highway Administration, Transportation Research Board, American Association of State Highway and Transportation Officials, and related organizations supporting public agencies focusing on automated systems and their experiences.

Agency Outreach and Interviews

Concurrently with the document review, the project team coordinated with ODOT staff to identify candidates for an interview. State DOT representatives were identified through the national practice scan and engagement with the project team's contacts at AASHTO committees, including the Committee on Maintenance and the Committee on Human Resources, through a research survey. Based on these findings, the team selected three agencies to interview and document their experiences with overtime staffing management. Each of the interviews were conducted virtually. Interviewees were asked to elaborate on their electronic systems and clarify their survey responses. The questions in the research survey were as follows:

- Does your organization have bargaining unit requirements for staffing emergency overtime callouts?
- Do you have an electronic system that assists or automates designating or notifying staff for emergency overtime callouts?
- Do you have an electronic system that documents overtime callouts?
- Do you have an electronic system that retains a documented history and used for resolving bargaining unit disputes?

- If you have an electronic system for managing or documenting emergency call-outs:
 - Are you satisfied with its ability to document call-outs?
 - Are you satisfied with its ability to assist or automate staffing for call-outs?
- If you have an electronic system that assists in staffing call-outs or documenting the history of callouts for overtime, please provide your contact information.
- Link to an electronic version of the Bargaining Unit agreement:

State of Practice Summary and Gap Analysis

The team summarized key findings from the prior subtasks in a slide deck, highlighting the state of practice within Ohio. The presentation served as a foundation for identifying potential gaps in practice and opportunities for investments and further research.

Automated Systems Review

A search and review of potential automated systems to alleviate staff management needs was conducted to identify available systems and evaluate opportunities and constraints based on ODOT needs and requirements.

Existing Systems Review and Demonstration

The project team conducted both an online search with keywords, such as automated callouts and overtime equalization, and an assessment of available overtime and staff scheduling systems utilized by other state DOTs, emergency services, health, security, and other related industries. For vendors of interest, online inquiries were submitted to engage in further conversation specific to functionalities, product fit, and a potential demo. After continued discussions with ODOT and assessing product fit with vendors, three virtual product demonstrations were scheduled to allow the project team and ODOT staff to see the available system in use and ask any remaining questions. A functionality matrix was utilized to summarize the information discovered in this task and compare the systems identified through the conducted scan. This included notes on functionality, reporting capabilities, staff and event logging, and pricing structure.

Needs Assessment

The team compared information from the existing systems and staffing management software systems against ODOT's needs and requirements in a work session. The focus of the work session was to discuss whether the available systems would meet ODOT needs and identify potential opportunities and constraints. Possible topics included feasibility of integration, system maintenance, data security, access restrictions, and reporting customization.

Based on all the findings from prior tasks, the team developed general recommendations for the adoption of a potential automated system to address overtime staffing challenges during unplanned events. Recommendations were generalized and provided an objective perspective on the benefits and drawbacks to implementing the available automated systems. Further studies were recommended for any path forward.

SUMMARY OF FINDINGS

This section summarizes the findings of the analysis, starting with the national practice scan. The section then provides detailed summary of the outreach efforts to state and local agencies and documents the ODOT State of Practice review regarding existing systems and software needed. The section then provides the summary of a preliminary scan of potential systems, concludes with a summary of the detailed review of three vendors providing automated solutions for overtime management.

Document National Practice Scan

Available documents from the Federal Highway Administration, Transportation Research Board, American Association of State Highway and Transportation Officials, and related organizations supporting public agencies were reviewed, focusing on automated systems and their experiences. Potential keywords and combinations of the following terms were used to search for documents: overtime staffing management, automated callouts, incident management, incident response system, emergency services, emergency management, roadway incident, freeway safety services, safety service patrols, computer-aided dispatch, traffic incident management, staffing automated systems, overtime equalization, employee scheduling software, responders, staffing coordination, and after-hour operations.

Through evaluating available documents, sources did not point to specific vendors or software, rather they highlighted solutions, such as ensuring that staff prepare for after-hours incidents during operating hours, incorporating data interoperability/integration using CCTVs, etc. to validate incidents and improve incident response time. For example, a study conducted for Florida DOT prepared by University of Florida focused on how the lack of incident information acted as a barrier to more responsive traffic operation management¹. The research focused on different methods to integrate incident information from various sources, such as a computer-aided dispatch to traffic management center integration and an information exchange hub. In a report from the Federal Highway Administration on “Best Practices in Traffic Incident Management,” methods were provided to improve communication challenges that may occur during after-hours operations for incident management, rather than provide any specific technical system to alleviate such challenges².

Though not related to overtime staffing challenges, Florida DOT’s SunGuide Software, a multifaceted advanced traffic management system that addresses their incident management

¹ Timely, Dynamic, and Spatially Accurate Roadway Incident Information to Support Real-Time Management of Traffic Operations. University of Florida, Gainesville. 2020. <https://trid.trb.org/View/1753529>. Accessed June 1, 2022

² Best Practices in Traffic Incident Management. FHWA Office of Transportation Operations. 2010. <https://ops.fhwa.dot.gov/publications/fhwahop10050/fhwahop10050.pdf> Accessed June 1, 2022

tasks and data integration needs provides a case study of building a successful in-house solution to internal management/communication challenges and needs³.

In summary, most documents highlighted the importance of computer-aided dispatch systems to integrate data, increase situational awareness, and allow for multi-agency coordination to improve incident response time. There were highly limited publications related to overtime management topics as documents related to staffing tended to focus on labor management. Relevant keywords to overtime management staffing challenges were not specifically mentioned, except on a few notes on how incident response performance is worse after-hours and is a challenge, as one may expect. The document scan illustrated a potential gap in the documentation of existing practices across the US related to overtime management and the lack of adopted automated systems in related practices.

Agency Outreach and Interviews

Concurrent with the document scan, a questionnaire was developed and sent out to state DOT representatives through relevant AASHTO committees to request information on any existing automated systems in practice and to gather their experiences with overtime management.

Responses were received from twenty-one states (Alaska, California, Delaware, Kansas, Mississippi, New York, Louisiana, Illinois, Indiana, Rhode Island, West Virginia, Springfield, Maine, Idaho, Nebraska, North Dakota, Michigan, Minnesota, Wyoming, Idaho, and Virginia) and three localities in Ohio (City of Akron, Springfield, and Village of Cleves).

Based on the responses regarding the use of automated systems, follow-up interviews were conducted for three states: Maine, Mississippi, and Nebraska. The agency outreach findings found that there was a general interest in finding an automated system to adopt for overtime management practices and automated systems that exist were either developed in-house or flawed in some capacity as to its efficiency contrary to manually calling from a roster in existing workflow.

A summary of the responses from the state and local agencies is provided below in Table 1 through Table 6.

³ SunGuide – Florida’s Advanced Traffic Management System Software. <http://www.sunguidesoftware.com/about-hub/about-sunguide2#DevelopProcess>. Accessed June 1, 2022

Table 1: Summary of Agency Responses - Alaska, California, Delaware, Kansas

Question	Alaska DOT	California DOT	Delaware DOT	Kansas DOT
Does your organization have bargaining unit requirements for staffing emergency overtime call-outs?	Yes	Yes	No minimum amount of OT is required but if the can elect to come in for call-outs unless it is a storm emergency in which case they are required to come in.	Yes but very minimal
Do you have an electronic system that assists or automates designating or notifying staff for emergency overtime call-outs?	Not really. Employer provided cell phone is all	No	Traffic Management center calls the appropriate area supervisors that are on call and then they contact the appropriate staff member on the rotating list	No
Do you have an electronic system that documents overtime call-outs?	No, just typical timesheet entry's	No	Payroll system via Maximo since a work order is generated	No
Do you have an electronic system that retains a documented history and used for resolving bargaining unit disputes?	No	No	Maximo and payroll records	No
Are you satisfied with its ability to document call-outs?	N/A	N/A	Doesn't provide the ideal level of info	N/A
Are you satisfied with its ability to assist or automate staffing for call-outs?	N/A	N/A	No automation	N/A
Please provide contact information :	N/A	N/A	N/A	N/A
Link to an electronic version of the Bargaining Unit agreement :	http://doa.alaska.gov/dop/fileadmin/LaborRelations/pdf/contracts/LTC2018-2021.pdf	BU 12 MOU 07-01-2021 through 06-30-2023 (ca.gov)	N/A	N/A

Table 2: Summary of Agency Responses – Mississippi, New York, Louisiana, Illinois

Question	Mississippi DOT	NYSDOT	Louisiana DOT	Illinois DOT
Does your organization have bargaining unit requirements for staffing emergency overtime call-outs?	No, our agency does not enter into bargaining agreements with any labor unions.	Yes	No	Yes
Do you have an electronic system that assists or automates designating or notifying staff for emergency overtime call-outs?	No, typically emergency callouts are handled via telephone from our Traffic Management Center or other first responder agencies. For known disaster response scenarios, we do utilize a web-based Emergency Operation Center (EOC) messaging and mapping application that was designed in-house.	No	No	YES, It designates the proper call out list order. We do not have an automated system that makes the call outs.
Do you have an electronic system that documents overtime call-outs?	Yes, our Maintenance Management System maintains the specifics of these type of work orders.	No	No	Yes
Do you have an electronic system that retains a documented history and used for resolving bargaining unit disputes?	No	No	No	Yes
Are you satisfied with its ability to document call-outs?	Yes	N/A	N/A	Yes
Are you satisfied with its ability to assist or automate staffing for call-outs?	No, it is not used to automate the staffing of routine call-outs. That is typically done in a verbal, analog fashion.	N/A	N/A	Yes
Please provide contact information :	Contact: Chandra Trammell Name: Chandra Trammell Position: Maintenance Management Coordinator Phone number: 601-359-7111 Email: ctrammell@mdot.ms.gov	N/A	N/A	Name: Laura Shanley Position: Maintenance Support Engineer 217-785-5483 Laura.Shanley@illinois.gov
Link to an electronic version of the Bargaining Unit agreement :	N/A	N/A	N/A	N/A

Table 3: Summary of Agency Responses – Indiana, Rhode Island, West Virginia, Springfield, OH

Question	Indiana DOT	Rhode Island DOT	West Virginia	Springfield, Ohio
Does your organization have bargaining unit requirements for staffing emergency overtime call-outs?	INDOT has no official requirements. This process is a compilation of volunteer lists, or cycle lists.	Yes. The emergency call-outs are clearly outlined in all the individual union CBAs.	No	Yes
Do you have an electronic system that assists or automates designating or notifying staff for emergency overtime call-outs?	No. INDOT utilizes the list noted above and then supervision physically contacts the employee.	No, Not in RI	No	We have an Excel spreadsheet that is used to sort the overtime list and calculate the employee's 90-day responsive percentage per the contract. Supervisors call employees at the top of the list.
Do you have an electronic system that documents overtime call-outs?	This is captured in our Work Management System, which is used to capture labor hours, equipment, and materials. Other forms of documentation for a call-out would be the Traffic Management Centers dispatch reports.	All time, straight or OT, is logged into an electronic timecard system at the end of each week.	No	Each division keeps a spreadsheet where they track which employee they called and if that person accepted or refused overtime. If they accept OT, they move to the bottom of the list. If they refuse, they remain at the top and their responsive percentage decreases.
Do you have an electronic system that retains a documented history and used for resolving bargaining unit disputes?	No. Only historical documentation would be housed in the Work Management System.	All electronic timecards are retained in our HR Unit in Providence. If there is ever a dispute, HR deals with the timecard issues.	No	The OT spreadsheets for each week are kept for recordkeeping.
Are you satisfied with its ability to document call-outs?	N/A	Yes. We also have random verification processes in place by our Field Operations Chiefs.	N/A	Yes

<p>Are you satisfied with its ability to assist or automate staffing for call-outs?</p>	<p>N/A</p>	<p>No. There is no automation for call-outs in RI. The calls are all done via phone/text.</p>	<p>N/A</p>	<p>No</p>
<p>Please provide contact information :</p>	<p>N/A</p>	<p>Contact: Name: Joseph A. Bucci, P.E. Position: State Highway Maintenance Operations Engineer Phone number: 401-734-4800 Email: joseph.bucci@dot.ri.gov</p>	<p>N/A</p>	<p>Contact: City of Springfield Service Department Name: Leslie McDermott Position: Deputy Service Director Phone number: 937-525-5848 Email: lmcdermott@springfieldohio.gov</p>
<p>Link to an electronic version of the Bargaining Unit agreement :</p>	<p>N/A</p>	<p>N/A</p>	<p>N/A</p>	<p>https://serb.ohio.gov/static/PDF/Contracts/2019/19-CON-04-0316.pdf</p>

Table 4: Summary of Agency Responses – North Dakota, Michigan, Minnesota, Wyoming

Question	North Dakota	Michigan DOT	Minnesota	Wyoming DOT
Does your organization have bargaining unit requirements for staffing emergency overtime call-outs?	No	N/A	Yes	No, Wyoming is a Right to Work State. The State of WY is not unionized. There is private company union works such as Pipe Fitters, and Electrical Contractors.
Do you have an electronic system that assists or automates designating or notifying staff for emergency overtime call-outs?	No	Financial/timekeeping system is used to show hours, for balancing between a classification. Supervisors make the calls to offer OT for balancing, and move down the list.	No	No, WYDOT uses our Transportation Management Center (TMC) to contact the Foreman. WYDOT during the winter months (Oct – May) has a call out sheet for each shop. This sheet is used to know who is next up to call out when needed. The Shop Foreman updates this list weekly to allow the crew to know who is the first contact.
Do you have an electronic system that documents overtime call-outs?	No	N/A	No	No, it is an honor system. Depending on why the call out is needed. The TMC will document the time they called the individual. The person will then radio back to the TMC when they are back to base and shut down. If the Foreman questions the call out they can contract the TMC to see what they have on file.
Do you have an electronic system that retains a documented history and used for resolving bargaining unit disputes?	No	N/A	No	No
Are you satisfied with its ability to document call-outs?	N/A	N/A	N/A	N/A
Are you satisfied with its ability to assist or automate staffing for call-outs?	N/A	N/A	N/A	N/A
Please provide contact information :	N/A	N/A	NA	N/A
Link to an electronic version of the Bargaining Unit agreement :	N/A	N/A	N/A	N/A

Table 5: Summary of Agency Responses – Cleves, Akron, Idaho, Virginia

Question	Cleves	Akron	Idaho	Virginia DOT
Does your organization have bargaining unit requirements for staffing emergency overtime call-outs?	No	Yes	No	Most unplanned overtime is directly handled by senior personnel authorized vehicles for commuting and responding to emergencies.
Do you have an electronic system that assists or automates designating or notifying staff for emergency overtime call-outs?	Yes	No – Staff is notified by phone, with the person reporting the incident typically being someone from the police department or a person from another city department that is staffed outside normal working hours.	No	No
Do you have an electronic system that documents overtime call-outs?	No	We log our activities (including OT call-outs) in Excel and Access, but are currently seeking a better and more efficient way to do it.	No	No
Do you have an electronic system that retains a documented history and used for resolving bargaining unit disputes?	No	No, other than Excel and Access as described above. This is not an efficient system because an employee’s work needs to essentially be logged twice, the first time by hand at the time the work is performed, then again later to transfer that information to Excel or Access.	No	No
Are you satisfied with its ability to document call-outs?	Yes	N/A	N/A	N/A
Are you satisfied with its ability to assist or automate staffing for call-outs?	Yes	N/A	N/A	N/A
Please provide contact information :	N/A	N/A		Contact: Name: William Collier Position: District Maintenance Engineer Phone number 757-328-1148 Email: W.Collier@vdot.virginia.gov
Link to an electronic version of the Bargaining Unit agreement :	N/A	https://serb.ohio.gov/static/PDF/Contracts/2018/18-MED-10-1164.pdf	N/A	N/A

Table 6: Summary of Agency Responses – Maine, Idaho District 5, Nebraska

Question	Maine DOT	Idaho, District 5	Nebraska DOT
<p>Does your organization have bargaining unit requirements for staffing emergency overtime call-outs?</p>	<p>In regard to our Transportation Workers, MaineDOT considers as a general expectation and a required condition of employment that employees be available for call-outs after hours and weekends.</p>	<p>No. Our Maintenance sheds have weekend call out lists of who would get called in that weekend. They are allowed to charge a minimum of 2 hours for callouts, if called out. If they are not called out during their weekend, no time is charged. We do not pay overtime, so any overtime work goes to Comp time.</p>	<p>Yes, if we utilize the on-call provision of the contract the employees are placed on call for a said timeframe and earn 12% of their base pay during that timeframe. If an employee is not placed on call and gets called in for an emergency, we would pay them from the time of the call and are guaranteed 2 hours of pay if they must report to duty.</p>
<p>Do you have an electronic system that assists or automates designating or notifying staff for emergency overtime call-outs?</p>	<p>MaineDOT does not have an electronic system that automates designation of or notifications to staff that will be called in for emergencies. Ahead of winter storms we hold pre-storm meetings and put employees on notice of who will be called in and for which cycle etc. If an employee has an agreed upon reason that they cannot be available, they are entered in the system for the same period as those working as Unavailable – Authorized. If someone doesn’t answer the call, they are recorded in our MATS system as Unavailable – Unauthorized.</p>	<p>The Idaho State Communications Center (State Comm.) is the dispatch center for ITD. They have a copy of our weekend callout lists and call off that. The staff then checks in and checks out through State Comm. We can request these records if needed.</p>	<p>Yes, we use a system called Onsolve CodeRed. Not all areas of the state utilize this system, but it is used predominately in Omaha metro area.</p>
<p>Do you have an electronic system that documents overtime call-outs?</p>	<p>Yes, MaineDOT utilizes our specialized activity tracking system called MATS for recording all payroll activities and other tracking such as materials, equipment used, the accomplishment in a unit of measure specific to the activity and even the asset that the work was completed</p>	<p>Emergency Callouts are documented through State Comm. The employee then records their time on their timesheet and charges the applicable work codes for what happened.</p>	<p>Yes, our TMC can run various reports. It will tell if someone answered the phone, if they didn’t answer, it is all timestamped</p>

	<p>on. All in a single Daily Work Report. This system allows us to use specific hour codes related to activities, For example if we respond to an accident in the night, and the period of time we are out there does not touch our regularly scheduled day, then we would record whatever activity we were doing and rather than the hour code being “regular” we would use “Call-Out Cash” or “Call out Comp” if the employee prefers compensating time off instead of the money.</p>		
<p>Do you have an electronic system that retains a documented history and used for resolving bargaining unit disputes?</p>	<p>Yes, MATS. MATS writes to an Oracle back-end database that we can retrieve information from quite easily using SQL queries etc., so we can provide ad-hoc reports and spreadsheets and all that but our information from MATS is retrieved and processed by the Department’s payroll and Human Resources system as well so that system can also be queried for any pertinent information related to equalization of Overtime. This is why we record those Unavailable – Authorized and Unavailable – Unauthorized folks. It’s all recorded and considered overtime for the purposes of equalization. We provide a permissions restricted report to our supervisors so they can keep track of Equalization of Overtime in keeping with our Bargaining Unit Contracts.</p>	<p>No</p>	<p>Yes, for the areas that utilize the system</p>

<p>Are you satisfied with its ability to document call-outs?</p>	<p>Absolutely, yes</p>	<p>N/A</p>	<p>Yes</p>
<p>Are you satisfied with its ability to assist or automate staffing for call-outs?</p>	<p>No, it doesn't do anything like that.</p>	<p>N/A</p>	<p>No, the automated scheduler doesn't always work properly so the State Operations Center staff will manually hit the launch and then the system will automatically call those in the desired area</p>
<p>Please provide contact information :</p>	<p>Contact: Name: Jim Saban Position: Superintendent of Highway Operations. MaineDOT, Bureau of Maintenance and Operations Phone number: 207-485-8486 (cell) or 207-624-3393 (desk) Email: Jim.Saban@maine.gov</p>	<p>N/A</p>	<p>Contact: Name: Jennifer Hendrick Position: State Operations Center (SOC) Manager Phone number: 402-331-5997 Email: Jennifer.hendrick@nebraska.gov</p>
<p>Link to an electronic version of the Bargaining Unit agreement :</p>	<p>https://www.maine.gov/oer/contracts/msea/OMS%202019-2021%20Final.pdf</p>	<p>N/A</p>	<p>https://das.nebraska.gov/emprel/docs/pdf/2021-2023/2021-2023%20NAPE-AFSCME%20Labor%20Contract.pdf View article 7/ 7.8 & 7.9</p>

ODOT State of Practice

The current ODOT state of practice involves a manual process to fill an overtime need. An electronic roster is sorted by cumulative overtime hours worked or offered, with those with less hours given higher priority. These rosters are printed out and held by the Transportation Manager (TM) to be used to fill an overtime need. When there is an overtime need, the TM references the print-out roster and calls crewmembers one at a time in the order of the roster until the need is filled. The details of each call (i.e., time called, the number called, the response) are also recorded on paper for record-keeping to prevent future grievances. After the overtime work is completed, the TM inputs all the recorded information into their overtime database system. The electronic overtime roster is then updated and reprinted following the rules stated in the collective bargaining agreement. The following findings document the current ODOT State of Practice.

Overtime roster rules

There are several rules that generally describe how the overtime roster is used within ODOT. These rules are as follows:

- Prioritization is based on cumulative hours that typically zero out in April
- For the first week where there are no cumulative hours, the priority for OT is based on seniority
- Each person that gets called and turns down an OT opportunity gets charged for hours refused
- Those who were not called do not get a refusal balance
- Those with less hours worked and offered will be higher on the list for OT
- Roster is reprinted by manager at minimum every pay period (two weeks) as it reshuffles
- The roster is posted every pay period so employees can see their place and their hours and make a dispute if necessary.

Incident response workflow by manager

Whenever an incident occurs that requires an overtime callout, the following workflow is generally used:

- The manager normally gets call from TMC, state patrol, or sheriff's department who is usually on scene
- He/she then tries to gather enough information to determine what's needed (how many people, any specialty/certification required, equipment, type of work)
- Manager usually knows what is needed, or it is specified by those on-scene
- He/she journals everything on paper call-out roster (reason, sometimes mile marker/area, time he calls each person)
- Manager goes down roster and calls each person until need is met
- In rare cases where a specialty/certification is needed (e.g. bucket truck certification), people will be skipped on the list and the reason for this will be documented.

- For each person, he/she documents Y/N (accept/refuse), which is essential to track
- Through Kronos, he/she documents TIME IN, TIME OUT, and total number of hours worked
- Records from calls are usually inputted into an electronic system after the incident is over (i.e., Monday if incident was over weekend)
- Manager manually deducts half an hour for lunch if lunch was taken from that 24-hour period or they worked a certain amount of time on a weekend
- If someone misses a call for OT:
 - If the need is already filled and they called back, then still considered a refusal
 - If the need is not filled and they call back, then given to them

Examples of grievances/complaints

ODOT commonly gets complaints or grievances that are filed related to staff feeling they were skipped or otherwise missed work opportunities. These complaints or grievances would need to be addressed utilizing call logs that were manually recorded by the TM during the callout process. Most common grievance examples include:

- Manager didn't call the most updated phone number of employee (it is employee's responsibility to make sure contact info is updated)
- Manager left a message, employee called back, manager was still making phone calls, employee leaves voicemail, need was filled by the time message was seen (timing of calls)
- Didn't receive call or voicemail

Most overtime grievances get settled, with low level complaints usually settled with manager. For example, if there was a valid misunderstanding for 4 hours OT, the opportunity to work 4 hours is provided within 45 days. Documentation of all phone records is **very important** in addressing complaints and grievances and ensuring labor union rules are followed.

Issues and Other Considerations

A few common issues and considerations with the current system were documented as follows:

- Manager wants commitment when doing call-outs – need to figure out how to best word things (i.e., give enough information but not too much)
- Breakdown of categories of call-ins can be misleading (i.e., accidents or fatalities with vehicle accident needs investigation which can take many hours; with confirmed fatality, will need to do stuff for court)
- Though there is usually enough documentation, sometimes wish there was more (case not specified)
- There's no flow sheet for incident response workflow as managers were usually HTs with experience on OT procedures; details are in the contract
- Unplanned events are problematic, not as much snow/ice as these are prepared for; anything that breaks normal operations throughout the day or at 3AM is an issue.

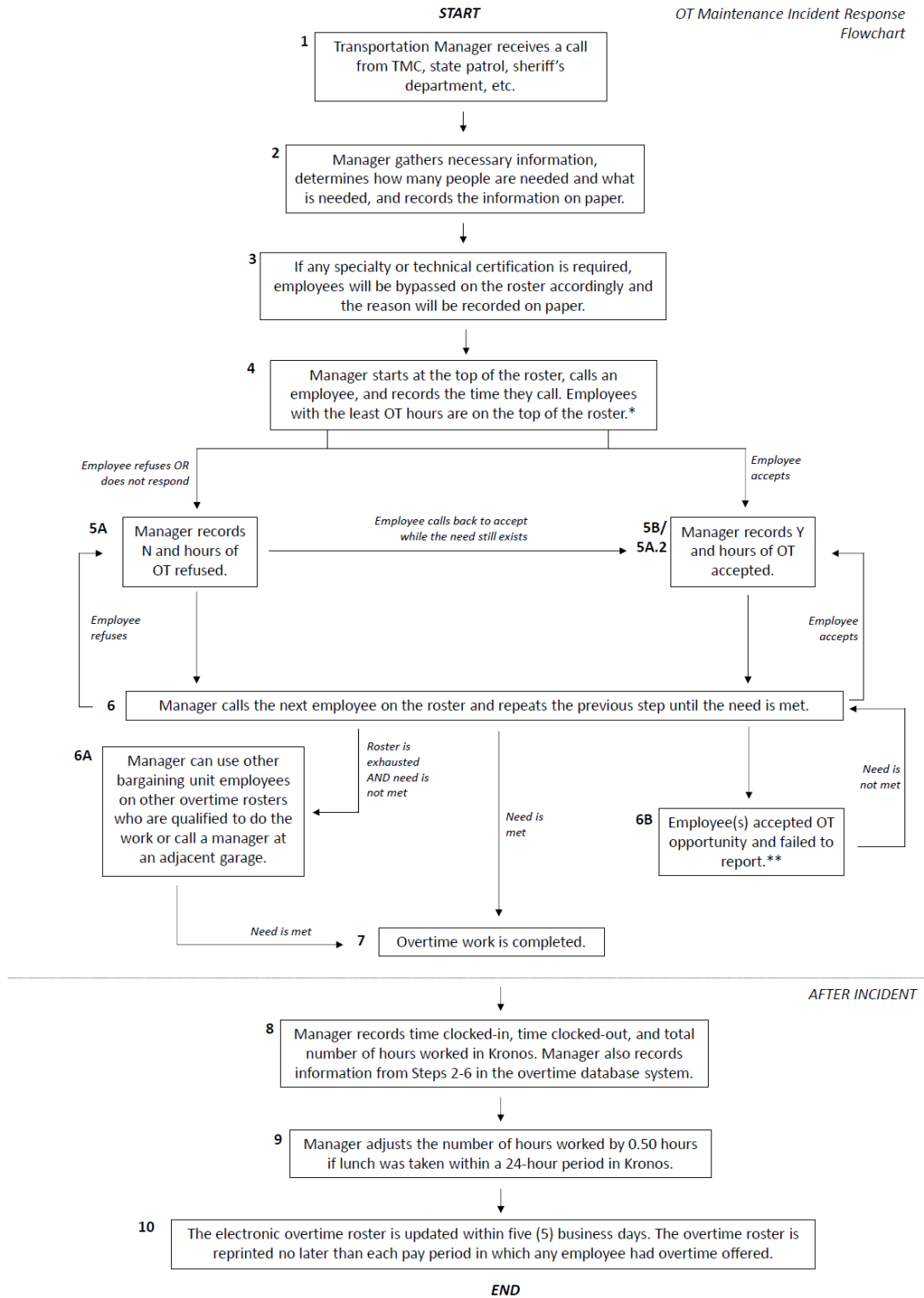
- Desire for app to have functionality where manager can specify people needed, any types of specialty/certifications needed, any other specific needs, have the system go through all the databases they have, calls/texts get sent out, and manager gets pinged their crew after some time.
- Lists of certifications exist but they're not consolidated

Summary Flowchart

Based on the ODOT state of practice review, a detailed step-by-step workflow and decision-making process for filling an overtime need was summarized in a flow chart shown in Figure 2. The process was divided into ten steps.

Steps 1 through 7 happen during the incident, while steps 8 through 10 generally happen after the incident and overtime callout has been completed. Steps 4 through 7 (**bold**) were the steps most desired and applicable for automation by a potential software solution.

- Step 1: Transportation Manager receives a call from TMC, state patrol, sheriff's department, etc.
- Step 2: Manager gathers necessary information, determines how many people are needed and what is needed, and records the information on paper
- Step 3: If any specialty or technical certification is required, employees will be bypassed on the roster accordingly and the reason will be recorded on paper
- **Step 4: Manager starts at the top of the roster, calls an employee, and records the time they call. Employees with the least OT hours are on the top of the roster**
- **Step 5: Manager records employee response and hours of overtime either refused or accepted**
- **Step 6: Manager calls the next employee on the roster and repeats the previous step until the need is met.**
- Step 7: Overtime work is completed (call out completed)
---- Remaining steps occur after incident ----
- Step 8: Manager records time clocked-in, time clocked-out, and total number of hours worked in Kronos. Manager also records information from Steps 2-6 in the overtime database system.
- Step 9: Manager adjusts the number of hours worked by 0.50 hours if lunch was taken within a 24-hour period in Kronos.
- Step 10: The electronic overtime roster is updated within five (5) business days. The overtime roster is reprinted no later than each pay period in which any employee had overtime offered.



**In the event of a tie in cumulative hours or cumulative hours do not exist, state seniority is used to determine the callout order. The overtime roster is zeroed on the last day (Saturday) of the pay period.*

***Employee(s) in question might be subject to disciplinary action.*

Figure 2: Summary Flow Chart of ODOT Overtime Management Process

Preliminary Scan of Systems

A preliminary scan and review of available overtime and staff scheduling systems used by other state DOT representatives and related industries, such as emergency services, health, and security, was conducted to identify potential automated systems that fit ODOT needs and requirements.

The following vendors were identified in the preliminary scan:

- InTime
- ePro Scheduler
- Shiftboard
- Vector Solutions
- Orion
- Snap Schedule 365
- Onsolve
- Arcos
- Vocantas

The project team conducted further research and due diligence through looking at information such as product functionalities, current clients in similar industries, and customer reviews.

Based on those reviews, further inquiries were submitted to InTime, Shiftboard, Vocantas, Arcos and Onsolve. In conversations with vendors, the documentation of the current ODOT state of practice for overtime staffing created in the ODOT practice assessment task was utilized to establish mutual understanding of needs and requirements and identify automatable steps in the workflow. InTime and Shiftboard were concluded to not directly meet ODOT needs and requirements. Vocantas, Arcos, and Onsolve remained potential automated systems, and demos were scheduled to assess product functionalities.

The high-level results of the initial screening are shown in Table 7. Overtime management and a “rule-based” ability (related to eliminating/avoiding conflicts and grievances) was a functionality often advertised in systems (i.e., rule-based in scheduling), but for several, the scheduling did not necessarily fit the needs for unplanned events.

Table 7: Initial Vendor Screening Results

Vendor	Type*	Caveat	Screening Result
InTime	<ul style="list-style-type: none"> • Web and mobile app • Public Safety 	No rule-based automated call outs	N
Shiftboard	<ul style="list-style-type: none"> • Web and mobile app • Production-centric industries 	Strength is in rotational schedules and not in unplanned events	N
ePro Scheduler	<ul style="list-style-type: none"> • Web-based • EMS, Fire, Hospital, and Government 	Automated scheduling seems standard and not relevant to unplanned events	P
Vector Solutions, Vector Scheduling	<ul style="list-style-type: none"> • Web and mobile app • Education, public safety, and others 	Ability to "alert employees of open shifts and watch in real time as staff respond and coverage is handled -	P
Orion, Workforce Management Plus	<ul style="list-style-type: none"> • Cloud-based • Public Safety 	Automated scheduling seems standard and not relevant to unplanned events	P
Snap Schedule	<ul style="list-style-type: none"> • Cloud-based • 911/EMS, Fire/Police 	Potential fit, but didn't appear to have large use.	P
Vocantas	<ul style="list-style-type: none"> • Web-based • Manufacturing, Healthcare, Service/Delivery 	Automated shift filling and integration with Kronos, but no mobile app on TM-end and not completely automated as per ODOT needs	Y
Arcos	<ul style="list-style-type: none"> • Cloud-based and mobile app • Utilities/Airlines/Critical Infrastructure 	Functionalities exceeds needs	Y
Onsolve	<ul style="list-style-type: none"> • Web-based and mobile app • Healthcare/Government 	Vendor utilized by Nebraska DOT for other purposes; Onsolve Platform can automate workflow but is less direct (grouping to set up callouts)	Y

N: No, software does not offer a good fit, based on review and speaking with vendors

P: Possible, software has general capabilities, but other systems determined to have better and more comprehensive fit

Y: Yes, good fit for the needs of the project

**: Not all industries are listed*

Automated Systems Review

ODOT needs and requirements were established through reviewing the current ODOT state of practice and were used as evaluation criteria for potential automated systems. The following criteria were developed as minimum requirements of a potential automated system as per ODOT needs and requirements:

- Generates rule-based rosters for overtime equalization
- Automates rule-based shift callouts via phone and text that is capable of contacting crewmembers one at a time
- Filter callout roster based on certifications if needed
- Is interactive to allow for crewmembers to respond to the callout
- Retains documentation and/or an audit trail of key information related to each call to address disputes and grievances
- Has a mobile app for the TM to easily launch a callout

Through evaluating vendors against these criteria and observing products in action in demos, Arcos was identified as a solution that could meet all the criteria and exceed ODOT needs. Onsolve’s Onsolve Platform was another potential solution that met most of the criteria. Vocantas was a potential solution that met some of the criteria. The functionality matrix in Table 8 displays the functionalities of the three vendors we participated in demos from. It is noted that these results may differ from the initial screening based on vendor conversations.

Table 8: Functionality Matrix of Vendors

Functionality	Arcos	Onsolve	Vocantas
Generate and/or process rule-based rosters	✓	✓	✓
Automate rule-based shift callouts via phone and text	✓	✓	✓
Calls crewmembers one at a time	✓	X ¹	X ¹
Filter based on certifications in same callout	✓	✓	X ²
Interactive and can receive responses	✓	✓	✓
Retains call log and documentation	✓	✓	✓
Mobile app for TM	✓	✓	X

1) Calls done by grouping

2) Requires two callouts to accomplish

Pricing Structure

The identified potential automated systems that met ODOT criteria were software-as-a-service companies. Given the distribution model of these solutions, the pricing structure across vendors was similar. There was an annual price to run the product, which includes maintenance, support, and hosting services to run the software. The annual price is often dependent on the number of contacts or active employees in the callout rosters. In addition to the annual price, there may be a one-time fee for professional services to set up and implement the solution. In general, there seems to be a recommended and/or required three-year term for adopting an off-the-shelf software-as-a-service, though shorter, more costly periods may be possible.

CONCLUSION AND RECOMMENDATIONS

This project identified several potential off-the-shelf automated systems that meet ODOT needs and requirements and can alleviate overtime management challenges. It is recommended that further studies, including a cost-benefit analysis and consideration for an in-house development of a solution, be conducted if ODOT wishes to move forward with the adoption of any software.

Through conversation and interview with ODOT staff, the following criteria were identified as minimum requirements for the systems:

- Generate and/or process/update rule-based rosters;
- Automate rule-based shift callouts via phone and text;
- Launch callouts from desktop AND mobile app;
- Contact crewmembers one at a time in proper order;
- Receive and process responses from crewmembers; and
- Retain documentation of key information related to each call.

Through evaluating vendors against these criteria, three vendors were invited to provide software demos with ODOT staff and the project team: Arcos, Onsolve, and Vocantas. Of these vendors, Arcos was identified as a solution that could meet all the criteria and generally exceeded needs. Onsolve was another potential solution that met most criteria, and Vocantas met some criteria.

Across all vendors, software was distributed as a software-as-a-service, resulting in an annual price to run the product and/or a one-time fee for professional services. The annual price was generally dependent on the number of active employees that could be contacted.

The research concludes that adopting an off-the-shelf solution can be beneficial to ODOT to alleviate overtime management staffing challenges. Additional studies should be conducted to assess the cost and savings of adopting a solution identified in this report.

Additionally, consideration for developing an in-house solution should be assessed. Given the upfront cost and annual maintenance cost of these services, ODOT may be able to develop a custom solution that fits its needs more cost-effectively than the commercial solutions. However, potential cost savings should always be evaluated against the added benefit of customer support and software troubleshooting offered by off-the-shelf solutions.