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Dr. Smilowitz studies the opportunities and challenges of introducing operational flexibility in distribution systems. With more flexibility, it is possible to significantly improve system efficiency (greater utilization of employees and equipment, reduction in empty miles traveled, etc.). At the same time, increasing flexibility expands the set of operational choices (possible vehicle routes, load assignments, etc.) which complicates already difficult routing and scheduling problems. Dr. Smilowitz has developed innovative modeling and solution techniques for these complex transportation systems. She has worked in both commercial applications (e.g., package delivery networks, intermodal drayage) and non-profit applications (e.g., interlibrary loan delivery, emergency supply distribution).

In my research, we consider the opportunities and challenges of introducing operational flexibility in freight transportation. With more flexibility, it is possible to significantly improve system efficiency (greater utilization of employees and equipment, reduction in empty miles traveled, etc.). At the same time, increasing flexibility expands the set of operational choices (possible vehicle routes, load assignments, etc.) which complicates already difficult routing and scheduling problems. Often analysis of these complex freight transportation systems requires approximations and simplifications in modeling and solution methods to obtain solutions with acceptable computational effort (i.e., computer time and memory).