Purpose: To apply the techniques recommended by the Baldridge National Quality Program (BNQP) in the evaluation and sustainable improvement of medical physics management and operations. Method and Materials: The BNQP, administered by the National Institute of Standards and Technology (NIST), has developed a comprehensive set of Criteria designed to enhance the performance of U.S. organizations in a broad range of industries, including healthcare. We have customized these Criteria to have relevance for a medical physics practice in an academic radiation oncology department. The Medical Physics Criteria for Performance Excellence consist of seven categories: Leadership, Strategic Planning; Focus on Patients, Other Customers and Markets; Measurement, Analysis and Knowledge Management; Workforce Focus; Process Management; and Results. Results: A team-based, self-assessment approach is used for evaluation. The quantitative analysis focuses on both process and results, generating a profile of strengths and opportunities for improvement relative to outcome oriented requirements. This methodology provides for a structured examination of internal operations and trends as well as a way to benchmark with other medical physics groups. Conclusions: The Medical Physics Criteria can facilitate the enhancement of organizational performance in an increasingly complex and competitive healthcare environment by helping medical physicists align resources with approaches; improve communication, productivity and effectiveness; and achieve strategic goals.