Venture's Technical Information:
CIRCUIT LOADING

How many lamps can be operated on a circuit? According the 2002 National Electric Code (NEC), in Section 210-20:

"Where a branch circuit supplies continuous, or any combination of continuous and non-continuous loads, the rating of the over-current device shall not be less than the non-continuous load plus 125% of the continuous load."

"A non-continuous load is any load that occurs for less than three hours."

For new installations of CWA and regulated lag ballasts the highest current draw is in continuous operation. The total number of ballasts must draw less than 80% of the circuit breaker rating. A conservative approach would use the current draw of ballasts operating aged lamps. As lamps age, system wattage on CWA ballasts climbs, leading to higher than rated input current. A safety factor of 1.2 times the rated current is a reasonable de-rating factor.

For new installations of lag, HX, and Single Voltage Hybrid ballasts the highest current draw is when the lamp is off. This occurs for seconds during starting or for minutes following a power interruption. Per the NEC, this is a non-continuous load. Following a lamp failure, power could be applied for a long time. The NEC provides no guidance for dealing with failed lamps that result in an open circuit current draw.

While it is unlikely that a lamp will be replaced in less than three hours, it is equally unlikely that users will tolerate very many lamp outages without replacements on a given circuit. As in the CWA case, a 1.2 safety factor seems reasonable. Divide the circuit breaker rating by the open circuit current draw of the ballast to determine the number of ballasts that can be connected (round down). Next, divide 80% of the circuit breaker rating by the normal operating current (round down) of a ballast. The first is normally the limiting factor in determining the allowable number of a ballasts on a circuit.

In retrofits, higher wattage lamps and ballasts are usually replaced with better performing lower wattage lamps and ballasts. Circuit loading is rarely an issue as long as the circuit was properly loaded initially.

Circuit Loading Comparison

Lamp Type	277V CWA Operating Current	277V CWA Systems Per Breaker	277V Opti-Wave Operating Current	277V Opti-Wave Open Circuit Current	277V Opti-Wave Systems Per Breaker	277V Quint-Volt Opti-Wave Operating Current	277V Quint-Volt Opti-Wave Open Circuit Current or Starting Current Max	277V Quint-Volt Systems Per Breaker
125W, M150	0.55	29	0.55	0.85	23	Not Available	Not Available	Not Available
175W, M137/M152	0.80	20	0.75	1.05	19	0.80	1.10	18
200W, M136	0.85	18	0.80	1.25	16	0.90	1.15	17
250W, M138/M153	1.10	14	1.10	1.35	14	1.20	1.40	14
300W, M151	1.25	12	1.25	1.55	12	1.30	1.75	11
320W, M132/M154	1.40	11	1.40	1.70	11	1.45	1.80	11
350W, M131	1.55	10	1.50	1.90	10	1.60	2.00	10
400W, M135/M155	1.75	9	1.70	2.10	9	1.75	2.20	9
450W, M 144	1.90	8	1.90	2.30	8	2.00	2.50	8

Note: 16A max continuous load and 20A max short term load used to calculate systems/breaker