
GENERAL PLANNING CONSULTANT:

TECHNICAL MEMORANDUM 88.3.12

TAZ CONVERSION PROCEDURE

Prepared for:

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

Prepared by:

SCHIMPELER-CORRADINO ASSOCIATES

June, 1988

GENERAL PLANNING CONSULTANT:

TECHNICAL MEMORANDUM 88.3.12

TAZ CONVERSION PROCEDURE

Prepared for:

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

Prepared by:

SCHIMPELER-CORRADINO ASSOCIATES

June, 1988

1. INTRODUCTION

The basic geographical unit for transportation modeling is the traffic analysis zone (TAZ). TAZs are defined in terms of census tracts; a TAZ is typically a single census tract or a group of census tracts. Occasionally, a very large census tract will be split into two or more TAZs.

Historically, the 5-county modeling area of the SCAG region has been divided into TAZs numbered from 1 to 1,325; this is sometimes referred to as the "1970 AZ system." When planning for Metro Rail began, it became desirable to further divide some TAZs lying within potential rail corridors, to improve modeling accuracy (see Technical Memorandum 86.1.4, "Patronage Forecasting Procedures," April 1987). This resulted in a 1628-zone system, which is the standard system currently in use at the Southern California Rapid Transit District. Accordingly, it will sometimes in this report be referred to as the "RTD AZ system."

Meanwhile, the Southern California Association of Governments (SCAG) and Caltrans were in the process of developing a completely new zone structure to use in their regional modeling. The new structure, alternatively referred to as the "1980 AZ system" or, in this memorandum, as the "SCAG AZ system," contains 1,555 zones. Unlike the RTD system, the SCAG system was not created simply by splitting some of the 1,325 original zones. Rather, it was developed de novo by aggregating, and sometimes splitting, census tracts -- often in different ways than was done in creating the 1,325-zone system. Therefore, there is not a simple correspondence between the 1,555-zone system and the 1,628-zone system. A SCAG zone may be equivalent to a single RTD zone, several RTD zones, or a portion of one or more RTD zones -- and vice versa.

As SCAG and Caltrans change from the 1970 AZ system to the 1980 AZ system*, the need will periodically arise to convert data from the SCAG AZ system (1555 zones) to the RTD AZ system (1628 zones). The most common situation in which this need is likely to occur is in preparing a trip table for input to the mode choice model. Normally, SCAG conducts the trip generation and distribution stages of the UTPS process, because SCAG forecasts and maintains the socio-economic data (such as population and employment) required as input by these two models. RTD then obtains from SCAG the trip table which is the output of the distribution stage, and uses it as the input to the mode choice stage. In the future, that trip table provided by SCAG will be 1555 x 1555. RTD must then convert it to a 1628 x 1628 table before performing the mode choice stage of the UTPS process.

---

*Caltrans has actually been using the new 1555-zone system since 1984; SCAG is in the process of switching over to it.

This memorandum documents the procedures developed by the GPC for converting a 1555 x 1555 matrix based on the SCAG AZ system to a 1628 x 1628 matrix based on the RTD system, and vice versa. Section 2 describes the methodology used to prepare the conversion set-up. Section 3 discusses the validation of the procedures.

Section 4 provides information on how to use the procedures, including the locations of all relevant files. Section 5 discusses simple extensions of the basic set-up, including converting a 1555 x 1555 matrix to a 1325 x 1325 matrix (or vice versa), and converting a 1555-element vector (e.g., a vector whose ith entry is the population of zone i) to a 1628-element vector (or vice versa). Copies of the cataloged procedures are contained in the Appendix.

2. METHODOLOGY

The conversion procedure developed by the GPC relies on the USQUEX program of the UTPS package. The concept underlying USQUEX is that ZONES are aggregated into DISTRICTS, with each DISTRICT defined to be equivalent to one or more ZONES ("DISTRICT" and "ZONE" are capitalized to denote the USQUEX context rather than the conventional use of the word "zone." As will be seen below, in this application of USQUEX, ZONES are sometimes TAZs and sometimes census tracts). USQUEX allows a ZONE-to-ZONE matrix to be SQUeezed or compressed to a DISTRICT-to-DISTRICT matrix, or, conversely, allows a DISTRICT-to-DISTRICT matrix to be EXpanded to a ZONE-to-ZONE matrix (the number of DISTRICTS is always smaller than the number of ZONES).

To perform an **expansion**, two basic elements are needed:

(i) a set of "&EQUIV" records, defining the ZONES comprising each DISTRICT. For example, the records

```
&EQUIV  DIST = 1, Z = 1, 2, 5      &END
&EQUIV  DIST = 2, Z = 3, 4         &END
```

define DISTRICT 1 to contain ZONES 1, 2, and 5, and DISTRICT 2 to contain ZONES 3 and 4.

(ii) a set of fractions, which tell the program how each DISTRICT's value is to be apportioned among the ZONES contained in it. For example, the fractions

[.25 .25 .40 .60 .50],

in conjunction with the &EQUIV records above, tell USQUEX that the value for DISTRICT 1 is to be divided among ZONES 1, 2 and 5 in the proportions 25%, 25%, and 50% respectively, while the value for DISTRICT 2 is to be allocated 40% to ZONE 3 and 60% to ZONE 4. USQUEX actually permits two sets of fractions to be defined: one to apply to the rows of the matrix being expanded and the other to apply to the columns.

To perform a **compression**, only &EQUIV records are needed. USQUEX will add the values for each applicable ZONE to obtain the value for the DISTRICT.

To convert a 1555 x 1555 matrix to a 1628 x 1628 matrix, it is not possible simply to expand from 1555 DISTRICTS to 1628 ZONES. This is because, as mentioned in Section 1, an RTD TAZ ("ZONE") may fall partly in one SCAG TAZ ("DISTRICT") and partly in another. Thus, at least one intermediate step is necessary: conceptually, SCAG

(1555) TAZs should be expanded to "somethings," and those "somethings" should then be squeezed back to RTD (1628) TAZs.

The logical candidate for those "somethings" are census tracts, since both the SCAG and the RTD zone systems are built on the same set of census tracts. In simplified terms, that is the concept behind the conversion procedure: expand the 1555 SCAG TAZs to 2342 census tracts (CTs), then squeeze the 2342 CTs to 1628 RTD TAZs (see Figure 2.1).

Unfortunately, however, this concept is complicated due to the fact that some TAZ's in each system are composed of **split** CTs. In the schematic in Figure 2.2, for example, which represents numerous actual cases, TAZ_1 consists of part of CT_1; TAZ_2 consists of part of CT_1 and part of CT_2; and TAZ_3 is defined to be part of CT_2 and all of CT_3. Thus, if, as the concept outlined above requires, we defined TAZs to be DISTRICTS and CTs to be ZONES, we would again have the problem that some ZONES would fall partly in one DISTRICT and partly in another.

Further, the SCAG system split CTs differently from the RTD system, so the idea of using (where necessary) divided CTs in the schematic of Figure 2.1 instead of whole CTs would be difficult to implement.

The conversion procedure developed by the GPC deals with this complexity by first defining DISTRICTS such that no TAZ and no CT lies in more than one DISTRICT. Thus, each DISTRICT, when related to TAZs, is composed only of whole TAZs or groups of TAZs, and the same DISTRICT, when related to CTs, is composed only of whole CTs or groups of CTs. Two sets of these DISTRICTs are defined: one set based on SCAG TAZs and one on RTD TAZs.

The conversion procedure described here, then, is actually a **four-step** application of USQUEX (see the schematic in Figure 2.3). To convert a 1555 x 1555 trip table to a 1628 x 1628 table, the following steps are involved:

(i) The 1555 SCAG TAZs are **squeezed** into 1251 (as it turned out) DISTRICTS having the property described above (that no TAZ and no CT lies in more than one DISTRICT). In the situation depicted in Figure 2.2, DISTRICT 1 would be defined (in this step) to contain TAZs 1, 2, and 3 -- any other definition (e.g., DISTRICT 1 = TAZs 1 and 2, DISTRICT 2 = TAZ_3) would result in a CT lying in more than one DISTRICT.

(ii) The 1251 SCAG DISTRICTS are **expanded** to 2342 CTs (using fractions based on population to expand rows, and fractions based on employment to expand columns). In the example of Figure

2.2, DISTRICT 1 in <u>**this**</u> step would of necessity be the same geographical area as in step 1, but would be defined in terms of CTs rather than TAZs; that is, DISTRICT 1 = CTs 1, 2 and 3.

(iii) The 2342 CTs are **squeezed** to 1362 RTD DISTRICTS, having the same property that each CT and each RTD TAZ lies in only one DISTRICT.

(iv) The 1362 RTD DISTRICTS are **expanded** to 1628 RTD TAZs, using population fractions to expand rows and employment fractions to expand columns.

To convert a 1628 x 1628 table to a 1555 x 1555 matrix, the schematic in Figure 2.3 is followed in reverse order, changing "expand" to "squeeze" and "squeeze" to "expand." That is:

(i) The 1628 RTD AZs are **squeezed** to 1362 RTD DISTRICTS;
(ii) The 1362 RTD DISTRICTS are **expanded** to 2342 CTs using fractions;
(iii) The 2342 CTs are **squeezed** to 1251 SCAG DISTRICTS; and
(iv) The 1251 SCAG DISTRICTS are **expanded** to 1555 SCAG AZs.

FIGURE 2.1

Schematic for Simplified Conversion Concept

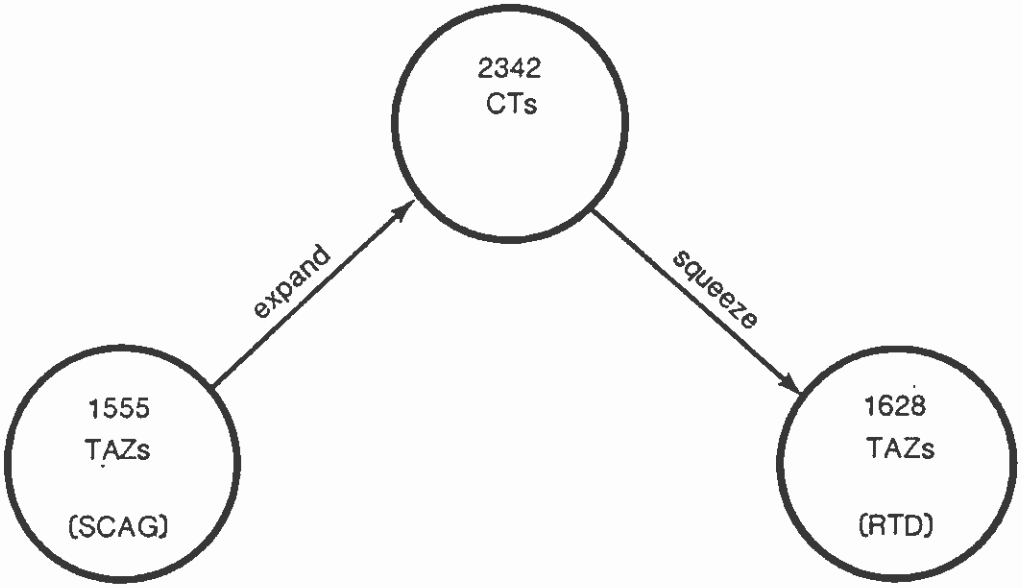


FIGURE 2.2

Schematic of TAZs Containing One or More Split CTs

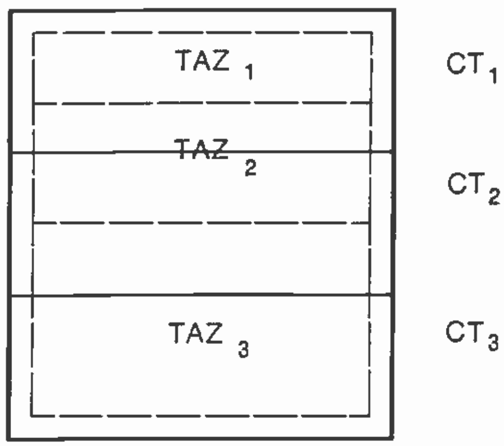
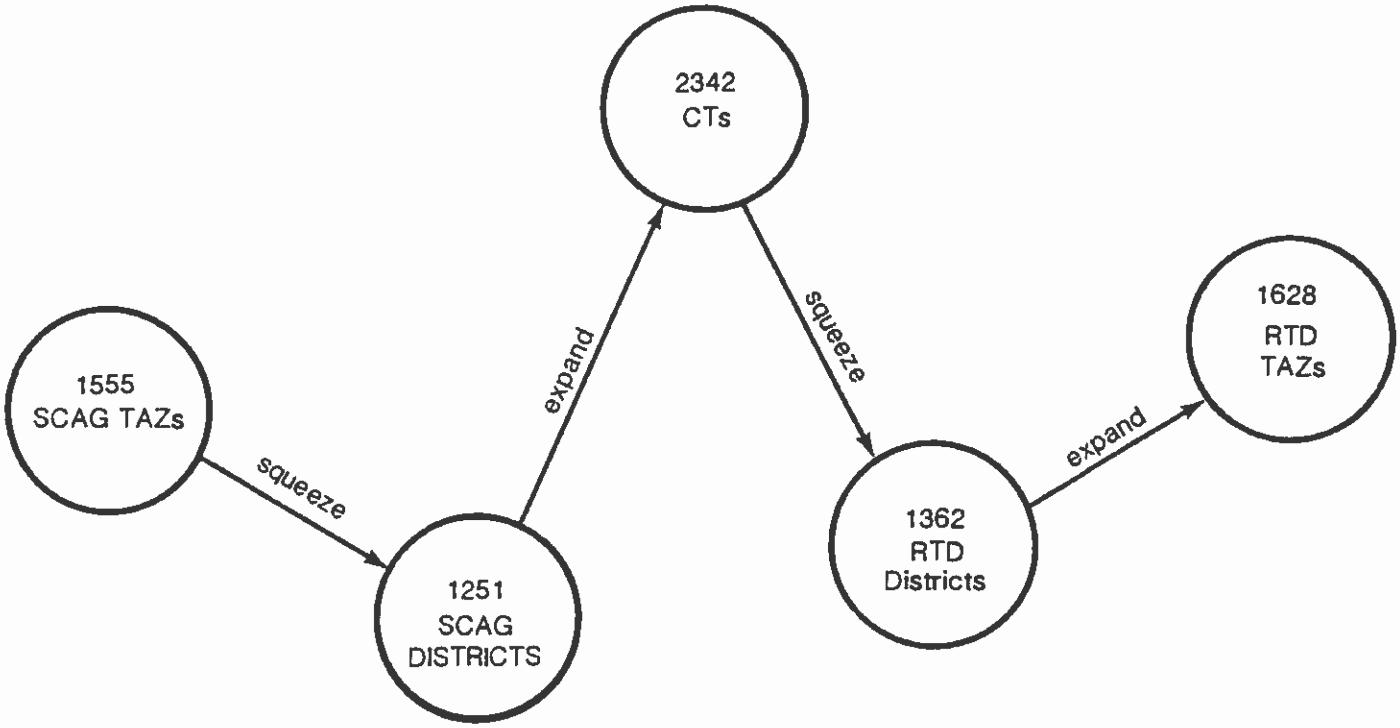


FIGURE 2.3

Schematic for Conversion from the SCAG TAZ System to the RTD TAZ System



3. VALIDATION

To check the conversion procedure from the SCAG AZ system to the RTD AZ system, a 1555 X 1555 test matrix was created with the number 1000 in every cell. That matrix was then converted to a 1628 X 1628 matrix using the four-step process described in Section 2. Selected elements of the matrix were manually checked, corresponding to one-to-one, many-to-one, and one-to-many mappings between zones in the two systems. In all cases checked, the conversion was accurate to within 0.5% or better.

A similar check was performed on the reverse conversion procedure (from the RTD AZ system to the SCAG AZ system), by creating a 1628 X 1628 test matrix with all entries set to 1000. A manual check of selected elements of the converted (1555 X 1555) matrix showed levels of accuracy comparable to those found in the first test.

4. HOW TO USE THE CONVERSION PROCEDURE

The conversion procedure is quite simple to use. Two PROCs have been added to MRP.URD79.EGOPROC library: "SCAG2RTD" and "RTD2SCAG". These two PROCs are reproduced in the appendix. Sample JCL set-ups for executing each PROC are shown in Figure 4.1. The user must simply define the appropriate input data set name (J1) and unit (UNITJ1) and the appropriate output data set name (J9) and unit (UNITJ9) in the desired set-up.

Those are the only actions needed to perform a conversion. As a point of information, however, the two PROCs themselves refer to several other data sets required by USQUEX. Those data sets are identified and described below.

FIGURE 4.1

SAMPLE JCL SET-UPS FOR CONVERTING BETWEEN SCAG AND RTD ZONE SYSTEMS

```
//YOURID   JOB (4200),'RTD2SCAG              ',
//         MSGLEVEL=(1,1),MSGCLASS=X,CLASS=C,
//         NOTIFY=YOURID,USER=YOURID,PASSWORD=????????
/*ROUTE  PRINT RMT72
//*******************************************************************
//***                                <<<<<< JCL >>>>>>           ***
//***                            MRPCSC.UTPS.CNTL(RTD2SCAG)      ***
//*******************************************************************
/*JOBPARM  PROCLIB=PROC01,LINECT=61,SYSAFF=*
//*
//TEST EXEC RTD2SCAG,CORE=500K,CLASS=X,
//  J1='DSN=MRP.TT.Y00PA5.HBWORK.DATA',
//  J9='DSN=MRP.TT.Y00PA5.HBWORK.DATA.Z1555',
//  UNITJ1=SYSDA,
//  UNITJ9='SYSDA,SPACE=(TRK,(300,50),RLSE)'
```

```
//YOURID   JOB (4200),'SCAG2RTD              ',
//         MSGLEVEL=(1,1),MSGCLASS=X,CLASS=C,
//         NOTIFY=YOURID,USER=YOURID,PASSWORD=????????
/*ROUTE  PRINT RMT72
//*******************************************************************
//***                                <<<<<< JCL >>>>>>           ***
//***                            MRPCSC.UTPS.CNTL(SCAG2RTD)      ***
//*******************************************************************
/*JOBPARM  PROCLIB=PROC01,LINECT=61,SYSAFF=*
//*
//TEST EXEC SCAG2RTD,CORE=500K,CLASS=X,
//  J1='DSN=MRP.TT.Y00PA5.HBWORK.DATA.Z1555',
//  J9='DSN=MRP.TT.Y00PA5.HBWORK.DATA.Z1628',
//  UNITJ1=SYSDA,
//  UNITJ9='SYSDA,SPACE=(TRK,(300,50),RLSE)'
```

JCL STEP	DATA SET	CONTAINS
SQUEZ1	SYSIN: MRP.PLANSYS.DATA (CONVERT1)	&PARAM ZONES = 1555, DISTS* = 1524, TABLES = 101 &END &OPTION SQUEEZ=T &END &EQUIV cards relating SCAG TAZs TO SCAG districts
EXPND2	SYSIN: MRP.PLANSYS.DATA (CONVERT2)	&PARAM ZONES=2342, DISTS=1524, TABLES = 101 &END &OPTION EXPAND=T &END &EQUIV cards relating SCAG districts to CTs
	A1: MRP.PLANSYS.DATA(FRACT2)	population and employment fractions by CT (ie: the fraction of the district's pop or emp contained in the CT)
SQUEZ3	SYSIN: MRP.PLANSYS.DATA (CONVERT3)	&PARAM ZONES = 2342, DISTS=1628, TABLES = 101 &END &OPTION SQUEEZ = T &END &EQUIV cards relating CTs to RTD districts
EXPND4	SYSIN: MRP.PLANSYS.DATA(CONVERT4)	&PARAM ZONES = 1628, DISTS = 1628, TABLES = 101 &END &OPTION EXPAND = T &END &EQUIV cards relating RTD districts to RTD zones
	A1: MRP.PLANSYS.DATA(FRACT4)	pop and emp fractions by RTD AZ

(CONTINUED)

*This parameter is the highest-numbered district, not the number of districts. As mentioned in Section 2, the actual number of districts is 1251 for the first two steps and 1326 for the last two.

JCL STEP	DATA SET	CONTAINS
SQUEZ5	SYSIN: MRP.PLANSYS.DATA(CONVERT5)	same as for EXPND4 except &OPTION SQUEEZ = T &END
EXPND6	SYSIN: MRP.PLANSYS.DATA(CONVERT6)	same as for SQUEZ3 except &OPTION EXPAND = T &END
	A1: MRP.PLANSYS.DATA(FRACT3)	pop and emp fractions by CT
SQUEZ7	SYSIN: MRP.PLANSYS.DATA(CONVERT7)	same as for EXPND2 except &OPTION SQUEEZ = T &END
EXPND8	SYSIN: MRP.PLANSYS.DATA(CONVERT8)	same as for SQUEZ1 except &OPTION EXPAND = T &END
	A1: MRP.PLANSYS.DATA(FRACT1)	pop and emp fractions by SCAG AZ

5. EXTENSIONS

Several extensions of the basic conversion procedure can be implemented relatively quickly. One extension that may be useful is converting a trip table from the 1555 - zone system to the 1325-zone system. This can be accomplished by converting the 1555 X 1555 matrix to a 1628 X 1628 matrix as discussed in the previous sections, then using existing procedures to squeeze the 1628 X 1628 matrix down to 1325 X 1325. Conversely, a 1325 X 1325 matrix may be converted by first expanding it to 1628 X 1628 using existing methods, then applying the procedure which will transform that matrix to 1555 X 1555. Converting between 1325 zones and 1628 zones is straightforward. The &EQUIV cards needed either to expand or squeeze are found in MRP.USQUEX.EQUIV.DATA (EXPAND), and the fraction cards needed to expand are found in MRP.USQUEX.EQUIV.DATA (FRAC1628).

Another useful extension, not of the matrix conversion procedure itself but of the concept behind it, is in transforming vectors of data from one zone system to another. For example, SCAG may provide RTD with zonal-level socioeconomic data in the 1555-zone system, and RTD will want to convert it to the 1628-zone system. Or, data may be available by census tract and need to be converted to zonal level.

To convert a vector of data, one would not use USQUEX but rather the expand and compress cababilities of UMATRIX. The &EQUIV cards created for the matrix conversion would be used to develop "mapping" vectors which identify the district in which each zone lies. The fraction cards already created would be used in expanding a district-level vector to a zone-level one. For details and examples, the reader is referred to pp. 65-69 of the UMATRIX writeup.

A final potential extension of the conversion procedure presented here is to develop direct equivalencies between the 1555-zone system and the 1628-zone system. Using the four sets of &EQUIV cards developed for this task, it is tedious but straightforward to identify the correspondence between zones in each of the two systems. This correspondence will, of course, sometimes be many-to-one, sometimes one-to-one, sometimes one-to-many, and sometimes many-to-many. As such, it could not be used directly in any of the UTPS programs. However, it would provide a useful aid to analysis.

APPENDIX

MRP.URD79.EGOPROC

MATRIX CONVERSION PROCEDURES

```
//SCAG2RTD  PROC CLASS=A,CORE=192K,
//          LIB='MRP.URD84.PROGLIB',UNITLIB=SYSDA,
//          J1=DUMMY,UNITJ1=SYSDA,J9=DUMMY,UNITJ9=SYSDA,
//          SPACES2='(CYL,(5,5))',UNITSCR=SYSDA
//*********************************************************************
//*     UTPS PROCEDURE FOR CONVUP - 30AUG88                           *
//*     TO EXPAND SCAG 1555 ZONING SYSTEM TO SCRTD 1628 SYSTEM        *
//*     SCHIMPELER CORRADINO ASSOCIATES                               *
//*     GENERAL PLANNING CONSULTANT TO S.C.R.T.D.                     *
//*********************************************************************
//*                 SYMBOLIC DICTIONARY                               *
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*       CLASS    = PRINT CLASS                                      *
//*       CORE     = REGION SIZE                                      *
//*       LIB      = PROGRAM LIBRARY                                  *
//*       J1       = INPUT MATRIX (I.E. SCAG 1555X1555 TRIP TABLE)    *
//*       J9       = OUTPUT MATRIX (I.E. RTD 1628X1628 TRIP TABLE)    *
//*       A1       = INPUT ZONE/DISTRICT FRACTION CARDS (EXPAND=T)    *
//*       A9       = OUTPUT ZONE/DISTRICT FRACTION CARDS (SQUEEZ=T)   *
//*********************************************************************
//*                  DATA CARD FILES                                  *
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*       SYSIN    = USQUEX CONTROL CARDS                             *
//*********************************************************************
//*
//SQUEZ1 EXEC PGM=USQUEX,REGION=&CORE
//STEPLIB  DD DSN=&LIB,UNIT=&UNITLIB,DISP=SHR
//FT05F001 DD DDNAME=SYSIN
//FT06F001 DD SYSOUT=&CLASS
//FT08F001 DD UNIT=&UNITSCR,SPACE=&SPACES2,DCB=(RECFM=FT,BUFNO=1)
//FT11F001 DD &J1,UNIT=&UNITJ1,DISP=SHR
//FT12F001 DD DUMMY
//FT13F001 DD DUMMY
//FT14F001 DD DUMMY
//FT15F001 DD DUMMY
//FT16F001 DD DUMMY
//FT17F001 DD DUMMY
//FT18F001 DD DUMMY
//FT19F001 DD DSN=&&TEMP1,UNIT=SYSDA,SPACE=(TRK,(300,50),RLSE),
//            DCB=(RECFM=VBS,LRECL=1604,BLKSIZE=1608),DISP=(,PASS)
//FT20F001 DD UNIT=&UNITSCR,SPACE=(TRK,(1,1)),
//            DCB=(RECFM=FB,LRECL=72,BLKSIZE=720)
//FT21F001 DD DSN=MRP.URD84.LOG,DISP=SHR
//A1       DD DUMMY
//A9       DD DUMMY
//SYSIN    DD DSN=MRP.PLANSYS.DATA(CONVERT1),DISP=SHR
//*
//EXPND2 EXEC PGM=USQUEX,REGION=&CORE
//STEPLIB  DD DSN=&LIB,UNIT=&UNITLIB,DISP=SHR
//FT05F001 DD DDNAME=SYSIN
```

```
//FT06F001 DD SYSOUT=&CLASS
//FT08F001 DD UNIT=&UNITSCR,SPACE=&SPACES2,DCB=(RECFM=FT,BUFNO=1)
//FT11F001 DD DSN=&&TEMP1,UNIT=SYSDA,DISP=SHR
//FT12F001 DD DUMMY
//FT13F001 DD DUMMY
//FT14F001 DD DUMMY
//FT15F001 DD DUMMY
//FT16F001 DD DUMMY
//FT17F001 DD DUMMY
//FT18F001 DD DUMMY
//FT19F001 DD DSN=&&TEMP2,UNIT=SYSDA,SPACE=(TRK,(300,50),RLSE),
//             DCB=(RECFM=VBS,LRECL=1604,BLKSIZE=1608),DISP=(,PASS)
//FT20F001 DD UNIT=&UNITSCR,SPACE=(TRK,(1,1)),
//             DCB=(RECFM=FB,LRECL=72,BLKSIZE=720)
//FT21F001 DD DSN=MRP.URD84.LOG,DISP=SHR
//A1        DD DSN=MRP.PLANSYS.DATA(FRACT2),DISP=SHR
//A9        DD DUMMY
//SYSIN     DD DSN=MRP.PLANSYS.DATA(CONVERT2),DISP=SHR
//*
//SQUEZ3 EXEC PGM=USQUEX,REGION=&CORE
//STEPLIB  DD DSN=&LIB,UNIT=&UNITLIB,DISP=SHR
//FT05F001 DD DDNAME=SYSIN
//FT06F001 DD SYSOUT=&CLASS
//FT08F001 DD UNIT=&UNITSCR,SPACE=&SPACES2,DCB=(RECFM=FT,BUFNO=1)
//FT11F001 DD DSN=&&TEMP2,UNIT=SYSDA,DISP=SHR
//FT12F001 DD DUMMY
//FT13F001 DD DUMMY
//FT14F001 DD DUMMY
//FT15F001 DD DUMMY
//FT16F001 DD DUMMY
//FT17F001 DD DUMMY
//FT18F001 DD DUMMY
//FT19F001 DD DSN=&&TEMP3,UNIT=SYSDA,SPACE=(TRK,(300,50),RLSE),
//             DCB=(RECFM=VBS,LRECL=1604,BLKSIZE=1608),DISP=(,PASS)
//FT20F001 DD UNIT=&UNITSCR,SPACE=(TRK,(1,1)),
//             DCB=(RECFM=FB,LRECL=72,BLKSIZE=720)
//FT21F001 DD DSN=MRP.URD84.LOG,DISP=SHR
//A1        DD DUMMY
//A9        DD DUMMY
//SYSIN     DD DSN=MRP.PLANSYS.DATA(CONVERT3),DISP=SHR
//*
//EXPND4 EXEC PGM=USQUEX,REGION=&CORE
//STEPLIB  DD DSN=&LIB,UNIT=&UNITLIB,DISP=SHR
//FT05F001 DD DDNAME=SYSIN
//FT06F001 DD SYSOUT=&CLASS
//FT08F001 DD UNIT=&UNITSCR,SPACE=&SPACES2,DCB=(RECFM=FT,BUFNO=1)
//FT11F001 DD DSN=&&TEMP3,UNIT=SYSDA,DISP=SHR
//FT12F001 DD DUMMY
//FT13F001 DD DUMMY
//FT14F001 DD DUMMY
```

```
//FT15F001 DD DUMMY
//FT16F001 DD DUMMY
//FT17F001 DD DUMMY
//FT18F001 DD DUMMY
//FT19F001 DD &J9,UNIT=&UNITJ9,
//             DCB=(RECFM=VBS,LRECL=1604,BLKSIZE=1608),DISP=(,CATLG)
//FT20F001 DD UNIT=&UNITSCR,SPACE=(TRK,(1,1)),
//             DCB=(RECFM=FB,LRECL=72,BLKSIZE=720)
//FT21F001 DD DSN=MRP.URD84.LOG,DISP=SHR
//A1       DD DSN=MRP.PLANSYS.DATA(FRACT4),DISP=SHR
//A9       DD DUMMY
//SYSIN    DD DSN=MRP.PLANSYS.DATA(CONVERT4),DISP=SHR
//*
```

```
//RTD2SCAG  PROC CLASS=A,CORE=192K,
//          LIB='MRP.URD84.PROGLIB',UNITLIB=SYSDA,
//          J1=DUMMY,UNITJ1=SYSDA,J9=DUMMY,UNITJ9=SYSDA,
//          SPACES2='(CYL,(5,5))',UNITSCR=SYSDA
//*********************************************************************
//*     UTPS PROCEDURE FOR CONVUP - 30AUG88                           *
//*     TO SQUEEZ RTD 1628 ZONE SYSTEM TO SCAG 1555 SYSTEM            *
//*     SCHIMPELER CORRADINO ASSOCIATES                               *
//*     GENERAL PLANNING CONSULTANT TO S.C.R.T.D.                     *
//*********************************************************************
//*                  SYMBOLIC DICTIONARY                              *
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*        CLASS    = PRINT CLASS                                     *
//*        CORE     = REGION SIZE                                     *
//*        LIB      = PROGRAM LIBRARY                                 *
//*        J1       = INPUT MATRIX (I.E. RTD 1628*1628  TRIP TABLE)   *
//*        J9       = OUTPUT MATRIX (I.E. SCAG 1555*1555 TRIP TABLE)  *
//*        A1       = INPUT ZONE/DISTRICT FRACTION CARDS (EXPAND=T)   *
//*        A9       = OUTPUT ZONE/DISTRICT FRACTION CARDS (SQUEEZ=T)  *
//*********************************************************************
//*                   DATA CARD FILES                                 *
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
//*        SYSIN    = USQUEX CONTROL CARDS                            *
//*********************************************************************
//*
//SQUEZ5 EXEC PGM=USQUEX,REGION=&CORE
//STEPLIB  DD DSN=&LIB,UNIT=&UNITLIB,DISP=SHR
//FT05F001 DD DDNAME=SYSIN
//FT06F001 DD SYSOUT=&CLASS
//FT08F001 DD UNIT=&UNITSCR,SPACE=&SPACES2,DCB=(RECFM=FT,BUFNO=1)
//FT11F001 DD &J1,UNIT=&UNITJ1,DISP=SHR
//FT12F001 DD DUMMY
//FT13F001 DD DUMMY
//FT14F001 DD DUMMY
//FT15F001 DD DUMMY
//FT16F001 DD DUMMY
//FT17F001 DD DUMMY
//FT18F001 DD DUMMY
//FT19F001 DD DSN=&&TEMP1,UNIT=SYSDA,SPACE=(TRK,(300,50),RLSE),
//            DCB=(RECFM=VBS,LRECL=1604,BLKSIZE=1608),DISP=(,PASS)
//FT20F001 DD UNIT=&UNITSCR,SPACE=(TRK,(1,1)),
//            DCB=(RECFM=FB,LRECL=72,BLKSIZE=720)
//FT21F001 DD DSN=MRP.URD84.LOG,DISP=SHR
//A1       DD DUMMY
//A9       DD DUMMY
//SYSIN    DD DSN=MRP.PLANSYS.DATA(CONVERT5),DISP=SHR
//*
//EXPND6 EXEC PGM=USQUEX,REGION=&CORE
//STEPLIB  DD DSN=&LIB,UNIT=&UNITLIB,DISP=SHR
//FT05F001 DD DDNAME=SYSIN
```

```
//FT06F001 DD SYSOUT=&CLASS
//FT08F001 DD UNIT=&UNITSCR,SPACE=&SPACES2,DCB=(RECFM=FT,BUFNO=1)
//FT11F001 DD DSN=&&TEMP1,UNIT=SYSDA,DISP=SHR
//FT12F001 DD DUMMY
//FT13F001 DD DUMMY
//FT14F001 DD DUMMY
//FT15F001 DD DUMMY
//FT16F001 DD DUMMY
//FT17F001 DD DUMMY
//FT18F001 DD DUMMY
//FT19F001 DD DSN=&&TEMP2,UNIT=SYSDA,SPACE=(TRK,(300,50),RLSE),
//             DCB=(RECFM=VBS,LRECL=1604,BLKSIZE=1608),DISP=(,PASS)
//FT20F001 DD UNIT=&UNITSCR,SPACE=(TRK,(1,1)),
//             DCB=(RECFM=FB,LRECL=72,BLKSIZE=720)
//FT21F001 DD DSN=MRP.URD84.LOG,DISP=SHR
//A1         DD DSN=MRP.PLANSYS.DATA(FRACT3),DISP=SHR
//A9         DD DUMMY
//SYSIN      DD DSN=MRP.PLANSYS.DATA(CONVERT6),DISP=SHR
//*
//SQUEZ7 EXEC PGM=USQUEX,REGION=&CORE
//STEPLIB  DD DSN=&LIB,UNIT=&UNITLIB,DISP=SHR
//FT05F001 DD DDNAME=SYSIN
//FT06F001 DD SYSOUT=&CLASS
//FT08F001 DD UNIT=&UNITSCR,SPACE=&SPACES2,DCB=(RECFM=FT,BUFNO=1)
//FT11F001 DD DSN=&&TEMP2,UNIT=SYSDA,DISP=SHR
//FT12F001 DD DUMMY
//FT13F001 DD DUMMY
//FT14F001 DD DUMMY
//FT15F001 DD DUMMY
//FT16F001 DD DUMMY
//FT17F001 DD DUMMY
//FT18F001 DD DUMMY
//FT19F001 DD DSN=&&TEMP3,UNIT=SYSDA,SPACE=(TRK,(300,50),RLSE),
//             DCB=(RECFM=VBS,LRECL=1604,BLKSIZE=1608),DISP=(,PASS)
//FT20F001 DD UNIT=&UNITSCR,SPACE=(TRK,(1,1)),
//             DCB=(RECFM=FB,LRECL=72,BLKSIZE=720)
//FT21F001 DD DSN=MRP.URD84.LOG,DISP=SHR
//A1         DD DUMMY
//A9         DD DUMMY
//SYSIN      DD DSN=MRP.PLANSYS.DATA(CONVERT7),DISP=SHR
//*
//EXPND8 EXEC PGM=USQUEX,REGION=&CORE
//STEPLIB  DD DSN=&LIB,UNIT=&UNITLIB,DISP=SHR
//FT05F001 DD DDNAME=SYSIN
//FT06F001 DD SYSOUT=&CLASS
//FT08F001 DD UNIT=&UNITSCR,SPACE=&SPACES2,DCB=(RECFM=FT,BUFNO=1)
//FT11F001 DD DSN=&&TEMP3,UNIT=SYSDA,DISP=SHR
//FT12F001 DD DUMMY
//FT13F001 DD DUMMY
//FT14F001 DD DUMMY
```

```
//FT15F001 DD DUMMY
//FT16F001 DD DUMMY
//FT17F001 DD DUMMY
//FT18F001 DD DUMMY
//FT19F001 DD &J9,UNIT=&UNITJ9,
//             DCB=(RECFM=VBS,LRECL=1604,BLKSIZE=1608),DISP=(,CATLG)
//FT20F001 DD UNIT=&UNITSCR,SPACE=(TRK,(1,1)),
//             DCB=(RECFM=FB,LRECL=72,BLKSIZE=720)
//FT21F001 DD DSN=MRP.URD84.LOG,DISP=SHR
//A1        DD DSN=MRP.PLANSYS.DATA(FRACT1),DISP=SHR
//A9        DD DUMMY
//SYSIN     DD DSN=MRP.PLANSYS.DATA(CONVERT8),DISP=SHR
//*
```